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The Editorial Rules of the Am. Soc. C. E.

New York, April 15, 1899.

To the Editor of the Railroad Gazette :

It occurs to me after reading your editorial of April 14 on the editorial rules of the American Society of Civil Engineers, that you might be interested in the following extracts from a letter which was addressed to the Board of Direction of that society. This letter was written last February, and you will observe that the ideas expressed in that letter are something like your own:

"The committee is charged to eliminate and to reject in total when required, to determine which papers shall be read in full and which by title only, it may return a paper to the writer for correction and emendation, while the prerogative as to the form of that which has been accepted is distinctly left with the author of the paper. A certain latitude in the exercise of those powers is inevitable and is just. The question is whether this due latitude has not been exceeded. . . . Presumed improvements in elegance of construction and in general form of expression must be held to be entirely outside of the province of the committee. Construction and diction are part of the style which goes towards making the individuality of the contributor.

"In establishing a further regulation, that of the suppression of the first personal pronoun, whether in original papers, in discussion by correspondence or in verbal discussion, the committee has perhaps gone farthest from the letter of its defined field of activity. . . . The value of engineering, as of any other, opinion depends, to a preponderant degree, on the individual who gives it; and it is not well imaginable that opposition to opinion advanced should in any way be deemed to evince personal ill will because the opponent uses the first personal pronoun instead of the term writer or speaker, nor can personality be held to be unduly obtruded by so doing any more than under the less usual and therefore more conspicuous method prescribed. The invariable use of 'author,' 'writer' and 'speaker' may well be held to detract from vigor of composition, and is, under circumstances, an indirectness that savors of affectation. It would be absurd for a participant in a verbal discussion to refer to himself as 'the speaker,' why should it be less absurd to put him on record as so doing in the transactions of the Society?

"I submit that the constitutional right of contributors to the transactions of the Am. Soc. C. E. to choose their own form and method of expression should not be limited, further than is defined by the Committee on Publications."

A MEMBER.

The M. of W. Association and the Roadmaster.

Port Jervis, April 14.

To the Editor of the Railroad Gazette:

In your editorial, April 7, on the proposed Association of Maintenance of Way Engineers, you give rather scant recognition to the existence of the Roadmasters' Association and imply that the Roadmasters' Association does not and cannot take rank with that of the Master Car Builders or Master Mechanics. Direct comparison with these associations is unfair because the necessity of standards governing the interchange of cars gives authority in its field to the Master Car Builders' Association. And the Master

Mechanics' Association is practically identical with the Master Car Builders.

The following figures are of interest as indicating the relative interest taken in the proceedings by attending members at the last conventions:

	Attendants.	Participants in Proceedings.
Master Car Builders	72	40
Roadmasters	116	46

Whatever the relative merit, practical, scientific or literary, of the proceedings of these conventions, attention may be asked to the fact stated in your editorial that maintenance of way officers (mostly roadmasters) direct the expenditure of 20% of all railroad operating expenses and to the figures derived from accident records that the percentage of all accidents charged to defects of road has decreased from 14% in the years 1873-77 to 9.8% in 1888 and to 4.2% in 1898. These figures do not indicate that roadmasters fail to keep abreast of the times.

It is to be regretted that there are not more engineers of maintenance of way among the working members of the Roadmasters' Association and that chief engineers do not take as active interest in the Roadmasters' convention as superintendents of motive power do in the Master Car Builders' meetings. But the Roadmasters' Association admits to membership engineers in charge of maintenance of way work and welcomes them to its meetings, so the rarity of men of the rank of the 18 attendants at the recent Buffalo meeting in membership in the Roadmasters' Association cannot be charged against the association. The writer earnestly asks any maintenance of way engineer wishing a maintenance of way association whose proceedings will represent the best work of the individual members to consider carefully whether this end may not be better attained by going into and working with the existing organization than by striving for a rival association. The various railroad clubs meeting monthly and bringing into closer touch all branches of the service meet many of the requirements of railroad associations. A national official association whose recommendations in maintenance of way matters will carry authority is desirable. In the opinion of the writer that association should be the Roadmasters' Association of America raised to as high a standing as the united and enthusiastic talent of all officers in charge of maintenance of way work can carry it.

E. T. REISLER,
Division Roadmaster, Erie RR.

A Rocky Mountain Snow Blockade.

Denver, Colo., April 15, 1899.

To the Editor of the Railroad Gazette:

Yesterday the snow blockade of the Colorado Midland R.R. was finally broken. This will go down in history as the most remarkable snow blockade ever known in the Rocky Mountain region and will probably never be exceeded, for it was a series of circumstances which united to make this blockade so difficult to handle. From the evening of January 27th to the evening of April 14th, the railroad company fought to keep the road open, but without success. In this fight two Jull plows and a rotary, each propelled by a team of five locomotives and assisted by large gangs of men, were pressed into the service. At one time one crew fought the storm forty-two hours without stopping, and at another time two engine crews were rescued from the mountain side after having been in continuous service for 624 hours. On the last day two locomotives were released that had been frozen in for seventy-three days.

In places the snow was banked to a height of thirty feet above the rail and once towards the end of the blockade, a gang of men on snow shoes hunted for two hours to dig down to find the roof of a snow shed. In places it was necessary to tunnel the snow banks and blow up the frozen mass with dynamite.

It is estimated that the cost to the railroad was \$60,000 in outlay of cash in battling with the snow. At one time 773 men were at work in fighting snow, and the February payroll for this work alone was \$26,000. Sixteen standard gauge engines were used in bucking snow, and 1,000 snow shovels, and besides this was a great outlay for food. The Jull plows borrowed from other railroads cost forty dollars a day. The Julls proved of no great service in such great drifts; the rotaries are much more satisfactory.

Without going over in detail the daily weather conditions during this period no one can gather a clear idea of the true cause of this long blockade. There were high winds, a peculiar condition of the snow and of the temperature of the air which caused moist and melting snow to suddenly congeal into ice, requiring the use of the pick to loosen the ice from miles of rails.

The Colorado & Southern suffered almost as severely, although it abandoned the high line between Breckenridge and Leadville and made no effort to open up the road. This line still remains closed. The Denver & Rio Grande experienced its chief trouble west of Leadville in the Canyon of the Grand River. The track follows the north side of the canyon and the unprecedented fall of snow caused numerous slides of snow and rock, causing interruptions of traffic sometimes lasting several days.

Had the Colorado Midland been using the Busk

tunnel instead of climbing over Hagerman Pass, there would have been but little difference in the length of time of the blockade, for the difficulties were along the entire route from Leadville almost to Glenwood Springs.

C. L. STONAKER.

The Association of Railroad Air Brake Men.

The sixth annual meeting of the Association of Railroad Air Brake Men, held at the Hotel Cadillac, Detroit, Mich., April 11 to 13, had a larger attendance than any previous meeting, about 160 members being present. The meeting opened with addresses by the Mayor of Detroit and by Mr. Robert Miller, Superintendent of Motive Power of the Michigan Central.

The Committee on "Air Gages for Signal and Driver Brakes," consisting of Messrs S. D. Hutchins, W. F. Broadnax, Otto Best, M. E. McKee and E. G. Desoe, called attention to the improper fitting up of driver brakes in railroad shops and the lack of maintenance, resulting in poor braking service. In certain tests of locomotives in passenger and freight service, said to have good driver brakes, the Committee found that where the initial cylinder pressure was 45 lbs., all the air escaped within 60 seconds after an application was made because of leaky packing. To show what pressures are ordinarily carried the Committee recommended that a single pointer gage be permanently attached in the cab and piped and fitted with cocks, so that the pressure in either the signal line or driver brake could be seen at will. Such an arrangement has been used by the New York, New Haven & Hartford with the result that the driver brakes are said to be kept in almost perfect condition. The discussion showed that such gages were considered essential by many of the members.

The report on the "High Speed Brake," by Messrs. R. F. McKenna, George Fredericks, L. F. Purtell, R. H. Blackall, F. M. Nellis and John McMullen, is of value principally in presenting a complete account of the different investigations and the apparatus used in the development of the Westinghouse high speed brake. The Galton-Westinghouse experiments were reviewed and data obtained in later American tests given, together with an illustrated description of the detail parts of the apparatus. This report puts in convenient form for reference all the data which have previously been published on the subject. The discussion of this report was principally in showing the satisfactory working of the high speed brake where it has been used.

Three topics were discussed during the noon hour of the first day. "The Best Disposition of the Air Pump Exhaust" was treated in much the same way as in a recent discussion before the Western Railway Club. It seemed to be the consensus of opinion that an arrangement was desirable which would automatically direct the exhaust steam into the tank (or steam heating pipes) or into the stack, as much of the present difficulty is due to the carelessness of the enginemen; or being occupied with other duties they allow the exhaust to discharge into the tank until the feed water becomes so hot that the injectors fail to work.

The second topic, "The 9½-in. Pump," was passed without discussion, as it was covered by one of the reports, while the third, "The Use of the Water Brake on Heavy Grades," brought out several favorable statements from representatives of roads in mountainous districts.

On the second day Messrs. G. R. Parker, F. B. Farmer, H. C. Frazer, F. M. Tiffany and E. H. De Groot, Jr., presented a report on the "Air Brake Recording Gage" and held that gages were valuable that would make a graphic representation of changes in pressure together with the time and duration of such changes. It was considered that the gages making a record on a revolving chart are the most suitable, and that the most useful diagrams are those in which the train line pressures are recorded. A number of such diagrams were exhibited and an explanation given of the deductions to be drawn from them.

Messrs. E. W. Pratt, S. D. Hutchins, F. C. Cross and T. L. Burton next presented a long report on "The Causes for Trains Parting." This subject has been discussed a number of times by other associations on the rather fundamental assumption that if the car couplings and draft gear are of sufficient strength, trains will not part. The present committee, however, took a somewhat different view and would assign as the real cause of the parting of trains the condition producing the shock which caused the breakage of the draft appliance; seventeen conditions were named which in this way affect the parting of trains. These are as follows:

- The proportion of link and pin couplers in trains.
- When of the M. C. B. type, the kind of coupler used.
- The size of the locomotives.
- The proportion of trains double-headed.
- The length of trains.
- The profile of the road and condition of track.
- The percentage of air-brake cars in use in trains.
- The kind of triple valves used.
- The prevalence of piped cars in trains.
- The position in trains of cars with the greatest braking power.

The size of the main reservoir on locomotives and the amount of excess at the moment of release; also the conditions of piping on engines.

The condition of the triple valves in trains.
The condition of air hose on cars and engines.
If so equipped, the independent brake on locomotives and tenders.

The condition of the brake cylinders and the adjustment of slack on the cars.

The condition of the automatic brake on engines and tenders.

The frequency of stops or slow-ups.

Each of these topics was treated at length, and with reference to the length of the train, it was said:

In this connection we would recommend that a committee be appointed, whose duty it shall be to make thorough tests of trains composed of from fifty air-braked cars up to some number which it may consider a reasonable practical limit, say ninety or one hundred, and to determine the efficiency of the present one-inch piping on locomotives as compared with a larger size, the efficiency of the different sizes of main reservoirs with different lengths of trains, and also the efficiency of the present port openings in the standard engineer's valve as compared with larger ports. It is our opinion that such a committee, with the assistance of the air brake manufacturers, would be able to offer recommendations on the following points, which recommendations would be of value to the members of this association and the railroads of the country:

The size of main reservoir best adapted for the various lengths of trains.

The amount of excess pressure best suited to the different sizes of main reservoirs now in use for the different lengths of trains, taking into consideration the effect on the pump, the brakes and the air hose.

The proper size for engine train line piping with long trains.

The comparative effect on long trains between port openings of the present engineer's valve and a valve with larger ports.

The proper method of handling long air-brake trains, with and without a compliance with the above recommendations, in order to produce the least strains throughout the train.

Further, with reference to increasing the percentage of air brake cars in trains:

From detailed investigation it appears that, up to a certain point, an increase in the percentage of air braked cars in use in a train tends to reduce the liability of trains parting, but on very long trains, if all air, there is an increase of parting above what there would be with the air brake working on a smaller proportion of the cars in the train. This latter fact is without doubt attributable to the lack of proper excess pressure or main reservoir capacity, or both, combined with a poor manipulation of the brakes on the part of the engineers in charge.

Two other extracts are given, one in reference to cars fitted with pipes but without air brakes, and the other locomotives with independent brakes:

It is only from the fact that the percentage of piped cars has hitherto been so small that trouble has not already been encountered. However, where such cars are to be handled we would respectfully submit:

(a) That no more than two piped cars be placed next to the locomotive, and in case of double-heading that none be placed ahead of at least one car having a quick-action brake in good working order.

(b) That no more than three piped cars be placed consecutively in a train.

(c) On trains having air throughout their entire length, that it is advisable to have the greater total number of air-braked cars in the forward half of the train. . . . The equipment of engines with independent brakes has caused more damage from break-in-tows than it has saved by its intended use, namely, a gradual taking up and holding in of the slack of a train. The experience of railroads having both independent and automatic engine brakes seems generally to tend toward the latter, with the keeping of them in good condition. It is more than probable that the result of any sudden application on the train, such as a burst hose, broken branch pipe or pulling the air from the rear, will cause a parting of some coupling near the forward end of the train (possibly that between the engine and tender) if a heavy engine equipped with an independent brake is working steam at the time the train brakes are applied.

Statistics collected by the Committee showed that for a given time on three different roads running respectively 43,281, 25,661 and 21,646 trains, there were 286, 206 and 88 cases of trains parting; 24, 15 and 22 per cent. of all reported partings occurred at the rear air brake car; 8, 12 and 16 per cent. within five cars ahead of that point; 20, 38 and 39 per cent. in the five cars behind that point and 10, 9 and 10 per cent. between the locomotive and the first car. These figures were submitted as showing that the handling of the air brakes has much to do with the parting of trains. The Committee also presented a form of report to be filled in by the conductor and engineman in reporting the parting of trains.

During the second session Mr. J. T. Rich, ex-Railroad Commissioner and ex-Governor of Michigan, addressed the meeting.

The third day three reports were presented and discussed. The first, "Steam Heating of Passenger Equipment," Committee, Messrs. T. A. Hedendahl, R. C. Cary, C. K. Ord, E. W. Pratt and C. A. Sanders, was a description of and rules for operating the different systems of steam heating now in use. This report is a valuable one for reference purposes.

The report, "Maintaining the Efficiency of Air Pumps," was by Messrs. W. H. Young, R. F. McKenna, J. H. Anthony, A. B. Brown, Charles Best, W. Daly, J. V. Bannon and F. M. Nellis. This Committee made a number of tests to determine the effect of re-boring the air cylinders of pumps, the temperature attained while compressing the air and the best

speed for running the pump. The following recommendations were made:

First, that all air cylinders when worn more than $\frac{1}{8}$ of an inch larger in diameter at the ends than in the center be re-bored and new packing rings fitted, and that great care be exercised by the parties doing the work. Second, that cylinder oil be used for lubricating air cylinders in preference to engine oil, for the reason that its flashing point is about 118 degrees higher than engine oil, and it will therefore stand considerable more heat. Also a nice fitting swab, well oiled, should be used on the piston rod, and that no oil be put in the air cylinder except as the pump calls for it by groaning. And third, that enginemen run their pumps just fast enough to accumulate and maintain the requisite amount of air, as indicated by the gage pressures.

The last report was by Messrs. J. L. Andrews, F. B. Farmer, J. E. Goodman, C. B. Conger and C. E. Slayton, "Organizing and Conducting the Air Brake Department." This was an outline of the requirements of air brake work, the various duties of the men employed, the methods used in air brake instruction, forms of reports, etc., but what was said of air brake testing plants is of general interest. Under this heading the Committee said:

That air-brake testing plants are an imperative necessity if brakes are to be well and economically maintained is now beyond question.

Such plants are of two kinds—the one for the repair track, and the other for the yard where trains are made up, being better defined as the repair track test plant and the terminal test plant.

While the former are now quite common, there are by far too few of the latter. For made-up freight trains to be given such a test as will develop existing defects with the minimum of delay, the supply of air for charging must be such as will enable the longest train being charged to or above 70 pounds pressure in less than five minutes, and without, too, the frequent delay to inspectors, due to waiting for the engine to couple on and get train charged. As soon as a train were made up, the inspectors should be advised by a visual or audible signal so that they might proceed with the test with the least interference with their other work.

This is a matter that should receive early attention, the best location for such plants determined on and a strong effort made to get them installed.

It was decided to hold the next annual meeting, commencing the first Tuesday in April, 1900, at Jacksonville, Fla.

The following officers were elected for the ensuing year: President, W. F. Broadnax; First Vice-President, R. H. Blackall; Second Vice-President, T. A. Hendendahl; Third Vice-President, P. M. Kilroy; Secretary, F. M. Nellis; Treasurer, Otto Best; Member of the Executive Committee, J. E. Goodman.

The subjects for reports at the next meeting are: "Yard Air Brake Repairs for Cars"; "Breaking Apart of Trains"; "The Steam Heating of Passenger Cars"; "Records and Reports of Slide Wheels"; "Defective Packing Rings in Air Brake Apparatus" and "Cut-out and Retaining Devices for Driver and Tender Brakes." The subjects for topical discussions are: "The Best Disposition of the Air Pump Exhaust"; "Care and Repairs to Whistle Signal Valves on Locomotives"; "Importance of Tight Non-return Check Valves in the Westinghouse Triple Valve"; "Air Pump Piston Rod Packing, Efficiency of Metallic, Fibrous and Semi-fibrous"; "The Operation of Brakes with Double-headers"; "The Practice of Making Running Tests of Brakes at Terminal Stations"; "Spliced Hose"; "High Capacity Freight Cars and the Probable Need for Reinforced Braking Power When Loaded"; "Should Caboose Cars Be Equipped with Conductor's Valves and Air Gages?" "Do Pneumatic Sanding Devices Supply Sufficient Sand to Give the Locomotive Its Maximum Tractive Power and Prevent Wheel Sliding on Long Passenger Trains?"

The Wabash, Lake Shore & Michigan Southern, Grand Trunk and Michigan Central air brake instruction cars were on exhibition at Detroit during the meeting. The following had exhibits of specialties:

Consolidated Car-Heating Co., Albany, N. Y.: Steam heating apparatus.
Detroit Lubrication Co., Detroit, Mich.: Lubricator with Tippet attachment.
G. P. McGann Air Brake Co., Detroit, Mich.: Air brake system.
F. D. Johnston, Massillon, O.: Hose clamp.
H. W. Johns Mfg. Co., New York: Asbestos pipe and boiler coverings and packing for piston rods, pumps, etc.
A. A. Lindley, Oskaloosa, Ia.: Pneumatic sanding device.
W. C. Parks, Charleston, Ill.: Dust guard for air brake hose.
Phenix Metallic Packing Co., Chicago: Metallic packing for air pumps.
Peerless Rubber Co., New York: Air and steam hose, packing and hose nipples.
Stoutenburgh Mfg. Co., Keiltsburgh, Ill.: The Cannon oiler.
Wheel Truing Brake Shoe Co., Detroit, Mich.: Brake shoe for grinding out flat spots.
Western Railway Equipment Co., St. Louis, Mo.: Houston sanding device.
The Wollaston Fdy. Co., Boston, Mass.: The Shaw brake slack adjuster.

The American Railway Association.

This Association held its spring meeting at Detroit, Mich., April 12. The report of the Committee on Safety Appliances, giving the number of freight cars now fitted with automatic couplers and air brakes, was given in the Railroad Gazette last week, page 262.

The attendance represented 90 companies. The officers chosen for the ensuing year are: President,

L. F. Loree, General Manager of the Pennsylvania Company; First Vice-President, W. H. Baldwin, Jr., President of the Long Island; Second Vice-President, J. T. Harahan, Second Vice-President of the Illinois Central. Members of the Executive Committee: R. H. Wilbur (L. V.), C. G. Waldo (C. H. & D.). Major Myers, President for the last three years, adhered to his determination, expressed a year ago, of not being a candidate for re-election at this meeting.

For the first time in its history the Association took no action on the date for changing time-tables. Lines which connect with one another now have their through-train arrangements so thoroughly systematized that Association action is no longer necessary. The adjustment of the schedules on the principal routes is so all-important that minor connections must be left to match as best they may; but the increase in the frequency of trains on all the older roads has, of course, made a great change in the conditions as compared with those which prevailed thirty years ago.

The revised Train Rules for single track working, which were the subject of a two days' discussion last October, were again reported on by the Committee on Train Rules, and in the form now reported the code was unanimously adopted after only a little discussion, and with no amendments of any consequence. The modifications suggested by members in the discussion at the last meeting, which have been reported in the Railroad Gazette (Jan. 20, March 3 and March 31), had been carefully considered by the Committee, and most of them are now incorporated in the code. The main body of the code, as now reported—that is to say, the general notice, the general rules, the definitions, the train rules proper and the rules for movement of trains by telegraphic orders—is reprinted in full in this issue of the Railroad Gazette. We omit the forms of train orders and the rules accompanying these forms; but these will soon be available, as Secretary W. F. Allen is to issue this portion of the code in pamphlet form. We understand, however, that no revised edition of the whole code (which includes block signal rules), is to be issued by the Association at present.

The Car Service Committee made a report recommending that the resolutions which have been adopted by the Association at various times in reference to car service be put together in the shape of a Code of Rules for Car-service; and the Association instructed the committee to prepare such a code.

The Executive Committee recommended that a special committee of seven be appointed to consider the large-car problem, and the Association instructed the President to appoint such a committee.

The Committee on Revision of the Rules of Order made a report embracing an elaboration of the present rules. This report cannot be acted upon until the next meeting. One of the rules recommended in it for adoption makes the voting power of railroads in the Association variable according to the importance of the road. A number of small roads under a single general manager will have but one vote; on the other hand, injustice to large roads (where two or more are under a single general manager) will be avoided by allowing additional votes in proportion to length of road.

The Chairman of the Standing Committee on Statistical Inquiry is Mr. E. F. Knibloe, of Buffalo.

The fall meeting of the Association will be held in New York City.

Proposed Abolition of Grade Crossing at Syracuse.

The city of Syracuse, the citizens of which have long been exercised over the annoyances of a large number of grade crossings which are traversed by numerous fast passenger trains and long freight trains, as well as a busy street traffic, have at length taken active measures looking to the separation of the grades. The mayor, having been duly authorized by the city council, has had plans made for a comprehensive treatment of the whole problem. Besides the crossings, six streets are traversed longitudinally for long distances by a large number of trains. These plans were made by Mr. Henry B. Seaman, M. Am. Soc. C. E., of New York City, and we give herewith a diagram of the principal part of the city, and another drawing on a larger scale, which show the conditions that had to be dealt with and the way in which the problem has been met. Following is an abstract of Mr. Seaman's report to the city government:

The central portion of the city of Syracuse is built upon a low level plain, a few feet above Lake Onondaga. It is surrounded on almost every side by hills and is entered by six railroads—the New York Central & Hudson River, the West Shore, the Chenango Valley, the Rome, Watertown & Ogdensburg, the Auburn branch of the New York Central and the Delaware, Lackawanna & Western. All these roads, except the Delaware, Lackawanna & Western, are under the management of the New York Central. The Syracuse Junction railroad skirts the city on the north and is used by the New York Central for sending through freight around outside the heart of the city.

The main line of the New York Central enters the city from the east, through a tunnel under the Erie Canal; it passes along Washington Street at grade,

to the passenger station at Franklin Street, and to the local freight yard beyond; thence over its own right of way to the west. This road passes 28 transverse streets at grade, besides occupying Washington Street. The West Shore enters the city from the east, about 800 feet north of the N. Y. C. and does not cross the Erie Canal within the city limits. It passes over its own right of way through almost its entire length, crosses 24 streets at grade and leaves the city, westward, just south of Lake Onondaga and parallel to the N. Y. C.

The passenger station of the West Shore is at Franklin Street and Belden Avenue, and the freight yard is distributed along its main tracks from the

ings, as well as portions of six streets occupied, and there are three separate passenger stations and four freight yards. About 80 passenger trains pass daily, in addition to the freight, and these trains use eight tracks at grade in addition to the two of the Junction.

The first step towards the abolition of grade crossings should be the concentration of all lines upon one route, and for this purpose four tracks would be required, two for passenger and two for freight. The only property in the city which answers the proposed concentration of freight is the southeast corner of the abandoned salt lands, and this seems admirably adapted for the purpose. It is centrally lo-

and the distance through the city would be 1,500 ft. shorter than by the present N. Y. C. main line. East of the city line the West Shore is at present about 16 ft. above the general level of the cross streets. This grade may be maintained level through the city to James Street, passing 16 ft. above the street crossings. From James Street westward the proposed grade would gradually descend until it meets the present grade west of Geddes Street. James Street, State Street and Salina Street would each be crossed by a steel arch bridge, while plate girder bridges would be used at other crossings where surrounding conditions do not warrant the additional expense of aesthetic construction.

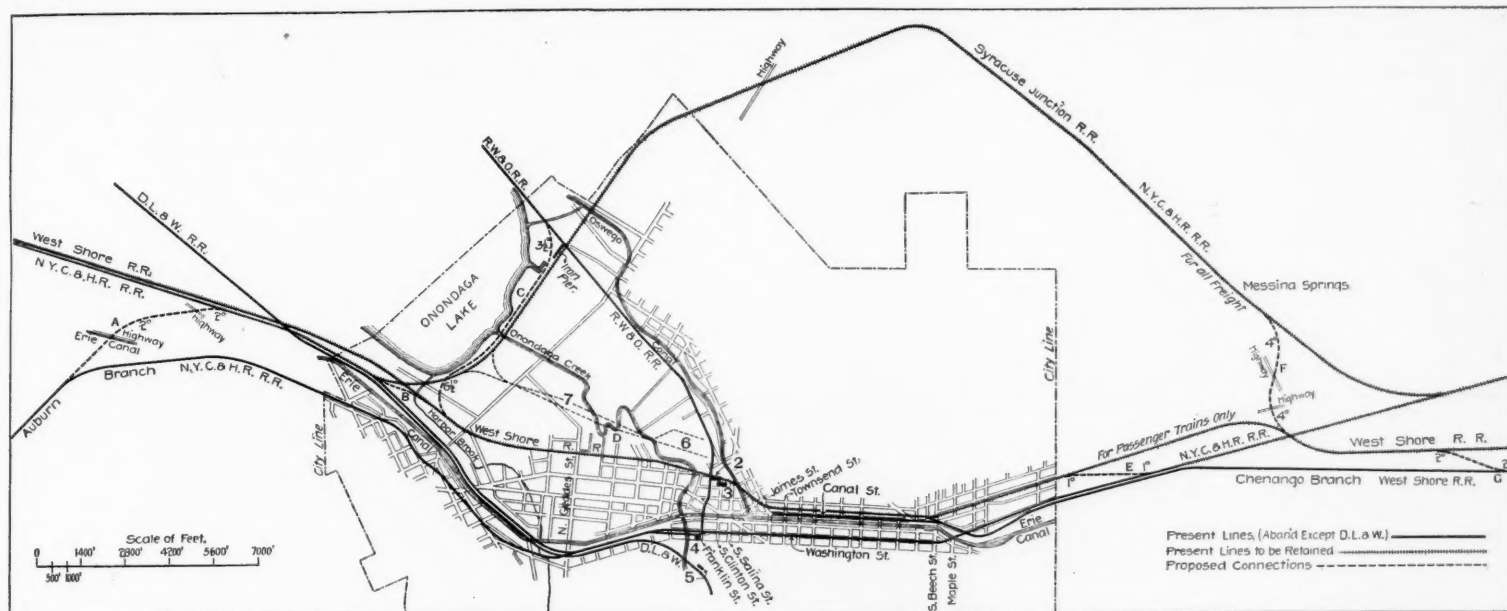


Fig. 1.—Proposed Arrangement of Tracks for Abolition of Grade Crossings at Syracuse, N. Y.

MR. HENRY B. SEAMAN, Engineer.

References: 2, Present West Shore Passenger Station; 3, Proposed New Union Passenger Station; 4, Present New York Central Passenger Station; 5, Present D. L. & W. Passenger Station; 6, Proposed Freight Yard; 7, Proposed Freight Switching Yard.

city line to Townsend Street. The Chenango road, operated as a branch of the West Shore, enters the city from the east, between the N. Y. C. and the West Shore, runs through Canal Street to the centre of the city, and is there connected with the West Shore. This road uses the passenger station of the West Shore, which has likewise absorbed its freight yards. It crosses 12 streets at grade, besides occupying Canal Street.

The R. W. & O. enters the city from the north, near the iron pier on Lake Onondaga, crosses the Syracuse Junction at grade, proceeds along North Clinton Street, and after crossing the West Shore at grade, continues along Franklin Street to the passenger station of the N. Y. C. This road crosses 13 streets besides occupying North Clinton Street and Franklin Street. The freight house is at Belden Avenue and Fulton Street, and the freight yard is

cated, readily accessible from the principal business streets, free from present incumbrances and surrounded by land which may be developed for manufacturing and business purposes. It may be reached by train from the Syracuse Junction railroad, requires but slight grading to fit it for yard purposes and has ample space to the west for a switching yard. An interchange yard may also be located upon property already owned by the New York Central adjacent to the present Syracuse Junction road at North Salina Street. This would probably locate the division terminals of the railroad near the union freight yard, instead of at East Syracuse, as at present.

The plans of the freight yard provide for six double tracks, averaging 1,200 ft. in length, with space for further addition when necessity requires. A large freight house and transfer shed is also provided for.

The reconstruction of the West Shore upon its own right of way will incur no liability for damage to adjacent property and it will necessitate the purchase of but little land not already owned by the company. This elevated line through the city would be for the exclusive use of passenger trains. In order to concentrate all passenger trains upon these tracks, connection will be made with all roads east and west of the city.

The plan proposed makes the most direct route possible through the city and gives all needed facilities for the quickest possible transit. It also permits of a union passenger station on Salina Street, even more centrally located than the present N. Y. C. station. The building should be sufficiently large to accommodate the offices of all the roads, as well as the passenger service, and the entire block between Salina, Noxon and Franklin Streets, should be taken for this purpose.

The main waiting room on the ground floor will permit of direct access to all trains through a passageway beneath the elevated tracks. The baggage-room, and probably the restaurant, should be located upon the same floor for convenience to passengers. The plans provide for eight tracks at the station for trains in service, and an additional track is provided by which all empty trains and engines may be shifted to the storage yard without passing through the station. All tracks are made accessible for either east or westbound trains, and stub tracks are provided for standing engines, eastbound.

West of the station is located the storage yard for passenger cars, so arranged that trains may be first run to the wash tracks, and after being cleaned, run by gravity into the storage yard. Two 15-stall round-houses are provided for coal pockets of 40 chutes and room for inspectors' offices and other buildings.

It will be seen that the plan contemplates six new connecting tracks, as follows: From the Auburn Branch to the main line of the New York Central at A, 6,100 ft.; from the New York Central to the West Shore at B, 2,200 ft.; from the West Shore to the R. W. & O. at C, 3,000 ft.; from the West Shore to the New York Central at E, 3,000 ft.; from the Syracuse Junction to the West Shore at F, 4,000 ft., and from the West Shore to the Chenango Branch at G, 2,800 ft.

The main tracks to be abandoned are the New York Central from B eastward to E, 5.2 miles, including the mile and a half in Washington Street; the Chenango Branch from Townsend Street eastward to G, 4.0 miles; the Auburn Branch from A eastward to the junction near the present passenger station, 3.8 miles, and the R. W. & O. from the present station northwestward nearly to the city line, 2.1 miles; total abandoned main line, 15.1 miles.

The estimated cost of the plan here outlined is as follows (passenger trains on elevated West Shore

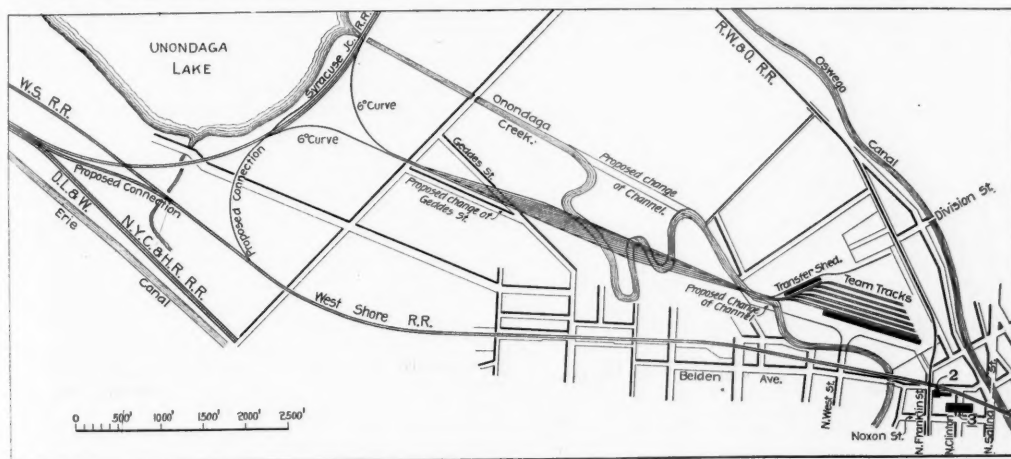


Fig. 2.—Proposed Freight and Switching Yards at Syracuse.

distributed along North Clinton Street (formerly Marsh Street) to the practical exclusion of city traffic.

The Auburn road enters the city at Solvay, crosses 17 streets at grade and runs to the passenger station and freight yard of the N. Y. C. The D. L. & W. enters the city from the south, runs through Renwick Avenue and Baker Street to the passenger station at Armory Park and to its freight yard adjacent to that of the N. Y. C., thence parallel to the latter road out of the city, westward. This line passes 35 streets at grade.

All trains, both passenger and freight, are handled over the routes described, except the through freight trains of the N. Y. C., which use the Syracuse Junction. It will be noted that there are 129 grade cross-

The team entrances to this yard are located at West Street, Franklin Street and West Division Street, with grades not exceeding 3%. Additional entrances may be made when required. A switching yard of 700 cars capacity is provided west of the delivery yard; for this purpose Onondaga Creek can be still further straightened. Access to the freight yard may be obtained over the Syracuse Junction road and for this purpose all roads must be connected with this line, east and west of the city.

For a general solution of the passenger traffic the West Shore presents the most favorable situation. It enters the city upon its own right of way and passes property of comparatively little value. Upon the railroad property the tracks could be elevated on an earth embankment without defacing the city,

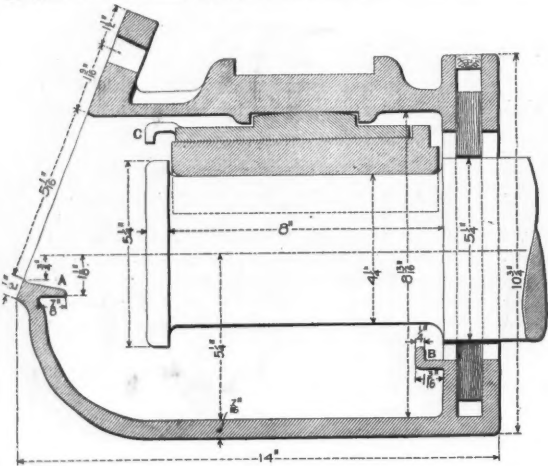
road; passenger station at Salina street; all freight trains on Junction road):

122,000 cu. yds. rock excavation, @ \$1.00.....	\$122,000
1,096,000 cu. yds. earth embankment, @ 25c.....	274,000
1,320 cu. yds. coping, @ \$20.00.....	26,400
22,100 cu. yds. ashlar masonry, @ \$5.00.....	176,800
2,400 cu. yds. rubble " @ \$5.00.....	12,250
300 cu. yds. concrete, @ \$5.00.....	1,500
45,400 sq. ft. pile foundation, @ \$1.00.....	45,400
10,694,000 lbs. steel bridges, @ 3½c.....	374,290
69,000 lin. ft. main track, @ \$1.25.....	86,250
96,000 lin. ft. freight yard and sidings, @ \$1.00.....	96,000
30 engine house stalls, @ \$1,600.....	48,000
2 Turntables, @ \$2,500.....	5,000
1 passenger station.....	300,000
14,000 sq. yds. paving, @ \$1.75.....	24,500
3,000 lin. ft. covered platform, @ \$9.00.....	27,000
20,000 glazed brick, @ \$120 per M.....	3,600
1 freight house, 1,000 ft. long.....	50,000
1 transfer shed, 400 ft. long.....	4,000
1 coal trestle and pockets.....	50,000
65 Catch basins, @ \$75.00.....	5,100
28,000 lin. ft. 6-in. tile drain, @ 30c.....	8,400
52,000 sq. yds. macadam, @ 70c.....	36,400
Signals.....	50,000
Land.....	609,000
	\$2,440,890
10 per cent. for engineering and contingencies.....	244,089
Total.....	\$2,684,979

Time did not permit of more than a general examination of the D. L. & W. line, but it appears practicable to bring this road from Jamesville north through the valley of Butternut Creek to De Witt Junction, east of the city, and there connect with the general arrangement for separating passenger and freight traffic as already described.

Main Air Pipe and Connections for Pneumatic Signals and Switches.*

In 1898, on the Pittsburgh division of the Pennsylvania Railroad, the electro-pneumatic block system was extended about 18 miles, and for the main air pipe the following items were ordered: Trunking made of rough white and yellow pine, bottom 2 x 4 in., sides 2 x 6 in. and covers 2 x 8 in.; foundation blocks 3 x 8 x 18 in.; ½, ¾, 3 and 4-in. galvanized iron



Journal Box and Lid Used on the Western Maryland Railroad.

pipe, screwed and socketed; 3-in. galvanized iron pipe, bent 90 degrees, 2 ft. 6 in. radius; plugs, galvanized iron tees, brass unions, brass cocks, expansion joints (iron body, brass working parts), 8-in. traverse; brass Ludlow gate valves, Norwalk standard air compressors, 14 x 16 in., driven by steam; vertical water tube, "Cahall boilers," 60 h. p.

A ditch was dug (by a gang of 25 men) 20 in. deep from top of rail. The trunking and pipe were delivered by the work train. The second day two carpenters and two laborers began laying the trunking. The top of the foundation blocks were set 20 in. from the top of the rail. The third day one plumber and helper and two laborers began laying the pipe. An average of 1,800 ft. of pipe was laid, tested, covers put on trunking, and covered each day of 10 hours.

Expansion joints are necessary to prevent slip from pulling out. With the temperature at 50 degrees, the slip was set to travel either way 4 in., and for each 10 degrees above 50 the slip was pulled out 1 in., and for each 10 degrees below 50 the slip was pushed in 1 in. Expansion joints were located about each 1,000 ft. A box was built around each joint, the top of which being above the ground, marks its location and is so arranged that inspection can be made of its action.

The pipe being laid in the center between tracks, it became necessary, to avoid laying pipe under the timbers of switches, to cross to the north or south and back to the center. Where this was done a piece of pipe bent to 90 degrees with a radius of not less than 2 ft. 6 in. was used.

A main valve was placed in the main pipe about 30 ft. on each side of each signal bridge. Between these valves, and about 16 in. from each, a 3 x 3 x 3-in. tee with outlet pointing up, a 3-in. plug tapped for ½-in. relief cock was placed in each outlet, for the purpose of blowing out the main pipe between the signal bridges. The 3-in. plug is removed (after the pipe between the two valves at the bridge is

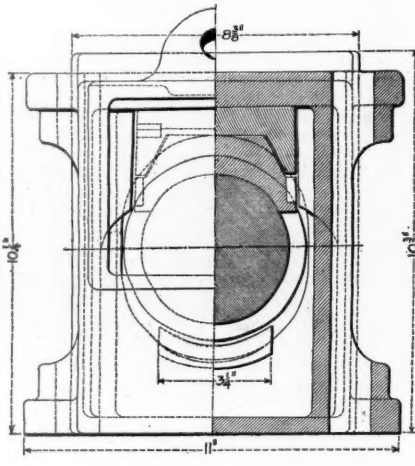
empty), to get full opening. Alcoholene is also put in the main pipe at these points to remove any frost or ice.

A reducing tee with outlet pointing up is left between these two valves for the branch connection, and the branch connection is made with a fall into the auxiliary reservoir, so that should any moisture get into the branch line it will reach the reservoir, there to be drawn off. At all low places in the main pipe a tee was placed with the outlet pointed down, from which a connection to reservoir was made, and any moisture that may be there is drawn off. A 4-in. pipe was used from cooling coils at each compressor plant to the 3-in. main pipe.

All pipe is galvanized, on account of better electrical connections where the pipe is joined, as the pipe is used as return for some circuits; and for the further and most important reason that it will not rust on the inside, which occurs with black pipe. This rust scales off and reaches the valves.

In 1884, four miles of 1½-in. main pipe was installed in about the same manner as that of 1898, with the exception that one mile was supported by stakes about 3 ft. above the ground. That under ground is in very bad condition, while that above the ground is as good as new. Pipe bent in the form of a hoop was used for expansion.

In 1888, 4 miles of 2-in. main pipe was installed in about the same manner as that in 1884, and in 1891 10 miles of 2-in. main pipe was installed where slip expansion joints and gate valves were used. All put in in 1888 and 1891 was placed in grooved lumber about 2 ft. in the ground. Some of that put in in 1888 is in pretty bad condition, and all of that put in in 1891 is in good condition, where the pipe was properly placed in grooved lumber. The actual cost of pipe and fittings in the ground for that laid in 1898 was \$3.237 per foot, 3-in. galvanized pipe costing \$1.97 per foot. All galvanized iron pipe must show by a test piece a tensile strength of not less than 46,000 lbs. per sq. in., with elastic limit of not less than 26,000 lbs. per sq. in., and with an elongation of not less



than 12 per cent. measured in a length of 8 in., and must stand bending cold through 90 degrees without sign of opening of weld. All 1-in. pipe and below must be proved to 300 lbs. per sq. in., and all 2-in. pipe and above must be proved to 500 lbs. per sq. in., hydraulic pressure.

Mr. Keppel takes special care to get full clean cut threads in pipe, and requires that the actual weight of pipe shall not vary more than 2 per cent. from the specified weight.

Mr. Keppel here presents records of air pressure in the main pipe at various points between Pittsburgh and A X tower, 36 miles out. These are taken at random from daily reports, the principal cabins making records of the pressure each half hour throughout the day. At Pittsburgh, maximum for a day, 95 lbs.; minimum, 87 lbs. At C M, 4.4 miles out, maximum, 90; minimum, 84. At Wilkinsburg, maximum, 85; minimum, 76. At Pitcairn, maximum, 91; minimum, 87.

In the following table are given the dimensions of the principal air compressors, Column A showing those at East Liberty, Wilkinsburg and Pitcairn, and Column B those at Grapeville and Pittsburgh. The air compressors are all Norwalk standard, run by steam engines. That at Wilkinsburg was run day and night for about 11 years from 1884, and is now used only in emergencies. That at Pitcairn was put in in 1888 and has been in service continuously since then, and is now in good condition.

	A	B
Diameter of air cylinder.....	10	14
Length of stroke.....	21	16
Diameter of compressing cylinder.....	6¾	9½
Diameter of steam cylinder.....	10	14
Revolution or double strokes per min.....	180	150
Displacement capacity cu. ft. per min.....	195	427
Steam pipe.....	2½	2½
Exhaust pipe.....	3	4
Air pipe.....	2½	4
Water pipe.....	¾	1
Recommended boiler power.....	30	70

Previous to 1895, during the winter months, it was almost a daily occurrence for frost and ice to cause an obstruction in the main air pipe. It was thought that by having air pass through reservoirs (same as

used on locomotives), at 500 or 1,000 ft. intervals for a mile from compressor plants, the moisture in the air would deposit in these reservoirs. This was tried with no better results, yet a great deal of moisture collected in these reservoirs. I then designed a cooling apparatus which was put in service during the winter of 1895, and since that time we have had good results. This consists of 90 pipes, each 11 ft. long, set vertically in a frame, with suitable connections. These pipes are ¾ in. in diameter and are set 2½ in. apart, center to center. The air goes upward through 45 pipes and is then returned downward through the other 45. The pressure is kept at about 120 lbs., a reducing valve, set to 85 lbs., being fixed in the outgoing pipe.

This arrangement does not entirely eliminate the trouble experienced by moisture in the main pipe, particularly in the summer, but we have had a great deal less trouble in the winter than before this was put in. Arrows show course of air through cooling coils. A pop safety valve (not shown), should be connected in 4-in. pipe between 3-way cocks, Nos. 2 and 3.

The M. C. B. Journal Box Lid.

In the Railroad Gazette of March 17 was printed an editorial on the above subject. We have received from Mr. David Holtz, M. of M., of the Western Maryland Railroad, a drawing of a journal box lid which has been used for 12 years on that road, with the following discussion:

"I use this style of the Fletcher lid on our passenger and freight equipment and on locomotive tender journal boxes. I designed this box lid from experience with the Fletcher lid. Later I learned that the Pennsylvania Railroad had made the same lid as my design, but made a lip on the lid to go around the outside of the box. I made my design with the lip, A, on the inside of the box and believe had the Pennsylvania Railroad made the lip as I did they would be using this lid to-day and be as well pleased with it as I am. This lid, with three or four exceptions, has remained on the box until the box was worn out, unless torn off by striking something, and then the box is generally broken and the lid put on another box. When the cars of this company are on foreign roads and are repaired with an M. C. B. box I do not complain, but remove the M. C. B. standard box and replace with our standard box and conclude that I have not lost anything. We are to-day running two local passenger trains on the west end of this road equipped with his box, and oil them but once a month. The bolts in the top of this box do not break off, nor the lids jar open. This may be on account of a good road bed, but then our cars go on other lines.

"I think the lip on the inside of the box protects the lid, as the axle presses the waste against this lip instead of against the lid, and the oil, instead of all running out between the lid, falls back into the box. The extension, B, in the back of the box also aids in keeping the oil in the box. The dust guard I have changed, making it the depth of the box. We dress off the high places of the box with hammer and chisel and set the malleable iron lid with a hammer, and if the bolt is screwed into the lug on the box to fit, the lid will not loosen.

"The lip, C, over the axle on the wedge is intended for convenience in taking out the wedge."

Inspection of Interlocking Plants.*

The apparent lack of any definite instructions, or systematic requirements, in the method pursued by the different roads in the inspection of interlocking plants, is the occasion of this paper being written. If a plant is inspected, it is highly important to have the inspection made in such a way as to definitely determine that the plant is in a safe working condition, so far as it is practicable to have it.

The results of these inspections should be properly recorded, so that in case of accident the signal department has positive proof at hand that the plant was in a safe condition to the best of its knowledge and belief. The head of the signal department should require an inspector to go on record in the making of his report of the condition of the plant as a means, not only of being sure that the plant is safe, but that the inspector has faithfully performed his work and does not himself have to be checked up. But one road, so far as could be ascertained, has such a report, and in this one many of the items reported on relate to parts which are scarcely subject to change under the usual working conditions, and should not be required at every inspection, since a record of conditions in which there will be no apparent change in the period from one inspection to another is apt to get the inspector in the habit of making the report without having made a proper examination of the parts. . . . Nearly all the roads of whom inquiries were made have men whose duty it is to regularly inspect the interlocking plants, and are responsible for their condition, but the methods of inspecting are left very much to the discretion of the individual. But few require a test to be made of the locking conditions at switches and derails and none of them say definitely what shall be considered good and what unsafe.

*A paper prepared by W. H. Elliott (C. M. & St. P.) for the April meeting of the Railway Signaling Club. Condensed

*A paper prepared for the Railway Signaling Club (April meeting), by A. M. Keppel, Jr. (P. RR.); Pittsburgh, Pa.—Condensed.

To reduce inspections to a system, they should, first, be made by responsible men definitely charged with this duty; secondly, they should be made at stated intervals, depending on the construction of a plant; thirdly, the inspections should be made according to definite requirements which cover the essential conditions for safe working; and, lastly, written reports should be made by inspectors giving the exact condition of the plant under each of the stipulated requirements.

With such a system, the third condition, or the one concerning the requirements for safe working, is the only one that calls for serious discussion. In the opinion of the writer an interlocking plant can be considered safe only when an inspection shows all the parts to meet the following requirements, which are given in the form of instructions issued to inspectors:

1. Examine all switch and lock movements and see that the movement is adjusted to make full locking travel, and requires lever in machine to spring connections slightly before it can be latched.
2. Facing point lock plungers must clear lock rod $\frac{1}{2}$ in. when withdrawn and have stroke of at least 7 in.
3. See that switch points and derails are adjusted to come up tight against stock rail.
4. Lock rods to be adjusted to prevent plungers entering hole when a $\frac{3}{8}$ in. rod or 20d wire nail is placed between point and stock rail 6 ins. from end of point.
5. Examine all bolt locks and see that they are properly connected and slot in switch bar is of proper length.
6. Measure height detector bar comes above top of rail when placed at center. Any bar not coming to $\frac{3}{4}$ in. or more above top of rail at all points must be raised.

In addition to the above, inspectors are required to report on the following requirements:

7. See that all distant signals are properly adjusted.
8. State if plant is in need of oiling, finding out when it was done last and say if oiled by you.
9. State if plant is in need of cleaning, also general condition of tower.
10. Check up tool list and say if tools are kept in good order or are allowed to lie around.

Each plant should be inspected once each month. Should the inspection show that repairs of a y kind are needed, this fact should be reported with a statement of what material will be needed to put the plant in good condition.

With the installation of interlocking plants as followed on the C., M. & St. P., which is to use a switch and lock movement only when it can be bolt-locked with the signal, and to bolt-lock a signal with all the switches and derails it governs wherever it is practicable, it is believed that a monthly inspection conducted on the lines laid down will reveal any defects in adjustment and make it very improbable that a failure of the connections in any way will allow of a signal being cleared when it is not safe for a train to proceed. With the important points in regard to safety carefully looked after, the general condition of the plant respecting foundations, ties, signal poles, etc., can easily be kept track of by the regular repair man, and by the signal engineer when making his inspections.

With inspections and reports carefully made as here outlined, the signal engineer has positive proof at hand of the condition of each important part of the apparatus at the time the inspection was made and in case of accident would have something to show to his superior officers, and, if necessary, to a jury, in support of his claim that the apparatus was not at fault.

Canda's 100,000-Lb. Capacity Box Car.

We illustrate a 100,000-lbs. capacity box car built on lines differing from usual car construction. This car is 40 ft. long and weighs 33,100 lbs., which is less than the average weight of a 34-ft., 60,000 lbs. capacity box car. To accomplish this end radical changes in the details of car framing have been resorted to, as also in the treatment of the materials and in their distribution to meet pre-determined strains. All essential M. C. B. standards have been adhered to and embodied in the car.

In testing, one of these cars, loaded with three car-loads of pig iron, aggregating 136,000 lbs., was run over yard crossings, sidings and switches continuously during 26 hours. The deflection at the center of the car on its camber line was but five-sixteenths of an inch, and when the load was removed the car resumed its normal position, or exactly the position it occupied before it was loaded.

It is claimed that such results have never been attained in any other design of car, that the Canda car is therefore the lightest and the strongest car ever built, and that, aside from the great saving in the hauling of dead weight, the annual repairs would be less than one-half those of any other car—all of which will commend it to railroad managers.

The Southern Pacific Co. has already ordered 2,000 of these cars, which are now being built by the American Car and Foundry Co., at its Huntington (W. Va.) shops.

The same principles of construction are embodied

in the 50-ton capacity, double-hopper, coal cars, which are also being built for the Southern Pacific Co., and have a like saving in dead weight. In fact, the same principles of construction are applied to all kinds of freight cars.

Mr. C. P. Huntington has for several years urged on Mr. Canda the growing necessity for cars of much lighter weight and of increased carrying capacity. The car herein described is the outcome of these suggestions. The conditions imposed by Mr. Huntington when placing the order for the Southern Pacific Co. cars were that they should not exceed in weight 33,300 lbs. and should carry 100,000 lbs. with the usual factor of safety.

We have seen the drawings of the car and of the details of construction, but they are not furnished us for publication, pending the further issue of patents. This car is designed and the patents are owned by Mr. F. E. Canda, No. 11 Pine St., New York.

Car Coupling Accidents in England.

In a recent issue of *Transport* (London) we find the following important account of the fatalities due to accidents in coupling cars on the railroads in the neighborhood of London, the account being reprinted from the *Westminster Gazette*. The reader will see at once that this investigator is not ignorant of "Pilgrim's Progress," but a man can easily do worse than form his style on that of Bunyon.

I decided to go and see some railway men coupling trains. At Farringdon Street a man carrying a whip told me to go down a very steep hill into a dark place beneath the ground. As I went down this hill I thought I heard the shrieks of men as they were crushed in pieces by the banging wagons. And I think I turned pale as I came nearer to this Valley of Death. But when I turned the last corner, and the whole scene was laid before me, I saw my thoughts had been a little premature. It was a place of loading and unloading. Men were swearing at large horses; goods were let fall out of trucks on to the ground, and piled into lorries with loud cries. But I pressed on with hardly a pause, seeing that I had not yet reached the right place. At

workmen who would be willing to take a serious view of things. But whether through the influence of the beer which stood by one of their stools, or merely because of the genial warmth or the burning coke, at any rate these men, too, insisted on the same old joke, and declared that in the Vauxhall goods yard coupling accidents, like miracles, do not occur. In a minute, therefore, I had left them, and was on my way to Clapham Junction. Here many of the passenger trains of the London & South-Western Railway are made up, and I interviewed the station-master upon this question of accidents. "I have been at this station," he said "for ten years, and during all that time I do not remember a single accident due to coupling carriages."

And after this I went home very weary to dinner, thinking what a shame it was that I, a genuine workman's friend, should be unable to discover any of their mangled remains to make a row about.

Trial of Compressed Air Car.

On Sunday afternoon last a successful trial trip was made with one of the Hoadley-Knight compressed air cars, 20 of which will be run on the 28th and 29th street lines of the Metropolitan Street Rail-

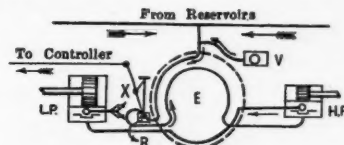


Fig. 1.—Flow of Air in Cars.

way Co., New York City. The car was under complete control, starting and stopping easily, and accelerating quickly.

The new cars are similar in appearance to the standard electric cars run on the road. The general arrangements of the machinery is practically the same as has been used for about two years on the air cars run on the Lenox Ave. line of the Metropolitan road and described in our issue of Dec. 31,



Box Car Designed by Mr. F. E. Canda—Length, 40 ft.; Weight, 33,100 lbs.; Capacity, 100,000 lbs.

last I saw one truck bang against another one, and immediately a young man coupled them with a pole. And I stood and watched him couple a great many trucks in this manner until I grew tired of it. "When is the other sort going to begin?" I asked him. "What?" he said. "When do you commence getting injured?" I explained. But the man was in rather a frivolous frame of mind, and tried to make out that they never were injured at Farringdon Street. "I know better than that," I said. "It is well known that there are frequent accidents. I wonder you don't stick up for working men better than that." "Go and ask the others, then," he said. I did; but they were as ridiculous as he was, and persisted in saying that coupling accidents never occurred. So I left them in disgust, thinking how base it was of them to conceal the misfortunes of their brother workmen.

It was snowing when I got to "the Banks"—which is the name of the goods station at St. Pancras. Here in the evening two or three hundred struggling men fill trucks for hours. At 6 o'clock they begin to be busy, and between 7 and 8 one is in danger of being knocked over. As the trucks are filled they are taken out of the station and formed into trains, and sent off on their journey through the darkness. I asked a man to take me out to where the trains were made up, and I stood and watched the trucks being coupled together with a pole. Then I said to my companion, "But how about these accidents?" The man hesitated a moment, and then in a solemn voice protested that he had never seen a coupling accident in his life. I turned my heel on the fellow, and strode up to the driver of the engine and demanded that he should show me some dead men. And when this man, too, began to repeat that nonsense about never having heard of accidents in the place, I took my leave of "the Banks" very angry, and arrived in course of time with my feet cold at the goods yard at Vauxhall. A bitter wind blew amongst the trucks, and I was very glad to find three fellows sitting round a fire of coke. I hoped that I had here discovered some

1897. The performance of the cars thus being pretty accurately known from two years' running, the present trials are in no way regarded as an experiment by the American Air Power Co. Reference may be made to the general arrangement of the machinery on the cars. In Fig. 1 is shown diagrammatically the course followed by the air from the time it leaves the storage reservoirs until it is exhausted at the low pressure cylinders. The valve V admits the air to the storage reservoirs, which communicate with the combined throttle and reducing valve R after passing through a copper pipe around the heater E for a few times. This heater contains hot water under

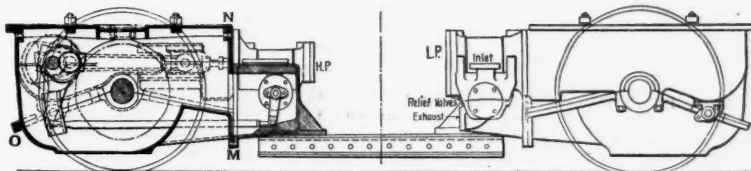


Fig. 2.—Section and Elevation of Oil Chests, Hoadley-Knight Air Car.

a pressure of from 225 to 300 lbs. per sq. in. This water is heated by steam at the same time that the air reservoirs are being filled at the charging station. The pressure being reduced at R, the air passes through the re-heater, and the temperature of the air is raised, thus increasing greatly its capacity to do work. Before the air passes into the high pressure cylinder, hot water is injected into the heated air. After leaving the high pressure cylinder, the air is again warmed by causing it to flow through pipes in the re-heater, and again hot water is sprayed into the pipe containing the air just before the air enters the low pressure cylinder.

The storage reservoirs are placed under the car body and under the seats. The storage capacity of these bottles is nearly 50 cu. ft. As referred to with some care in our issue of Jan. 13, 1896, exhaustive tests have been made to determine the best bottles

to use for the very high pressures. The storage pressure now does not exceed over 2,500 lbs. per sq. in. Some advocates believe that this will be increased, but it is difficult to see, if this were done, how the efficiency of the system will be materially increased. Besides, the possibility of an accident should be the determining condition in the consideration of increasing the pressure.

The 1,500 H.P. compressor has not been completed and for the present the few cars run will be charged by the 400 H.P. compressor formerly used at the 146th street station. As soon as the large Ingersoll-Sargeant compressor has been completed, about 20 cars will be run on the 28th and 29th street lines.

Fig. 2 shows a section and an elevation of the oil chest with the Hackworth valve gear. The machinery runs in the bath of oil, the iron casing or box for the high pressure end being lettered MNO in the drawing.

Accident at the Willis Avenue Bridge.

On the afternoon of April 11, three bents of falseworks of the Willis Avenue Bridge, New York City, collapsed, carrying with them the erecting traveler and a scaffold upon which three masons were pointing the river pier. It resulted in the death of the three masons and of two men of the erecting gang, besides the injury of some twenty others.

The bridge when completed will connect Willis Avenue, on the north of the Harlem River, with First Avenue on the south; crossing the river with three spans, two fixed and one draw, besides extensive approaches on either side.

The contract for the bridge was let to John C. Rogers, who sublet the iron work to the Edge Moor Bridge Company. In erecting the falseworks, the Bridge Company employed John C. Rogers to drive the piles, since his pile-driver and men were already at the site.

The two piers for the north fixed span had been completed and falseworks were being erected between these piers preparatory to erecting the iron work. The north pier is about 30 ft. inshore, while the river pier is 250 ft. further south, with foundation sunk to a depth of 73 ft. below low water. The river at this point is 24 ft. deep, and the bottom is composed of 2 ft. of silt, 7 ft. of sand and gravel, and about 40 ft. of clay and sand, in mixed layers. A good sand bottom was reached at 73 ft. Soundings had indicated rock at a depth of about 50 ft., and it is reported that some difficulty was experienced in sinking the last 25 ft., resulting in considerable blowing of air from beneath the caisson.

The design of the falseworks (see Fig. 1) provided for nine bents 24 ft. 8 in. apart. Each bent was composed of seven 50 ft. piles, extending 10 ft. above low water, capped with a 12-in.x12-in. timber and braced by 3-in.x12-in. planks. Upon this pile bent was a trestle bent about 16 ft. high, of 12-in.x12-in. timbers, braced with 3-in.x12-in. planks. The trestle bents were X braced in every alternate panel, with 3-in.x 12-in. planks, and were connected at the sills by continuous lines of 12-in.x12-in. string pieces, extending the entire length of the trestle. The trestle was decked by 8-in.x16-in. stringers.

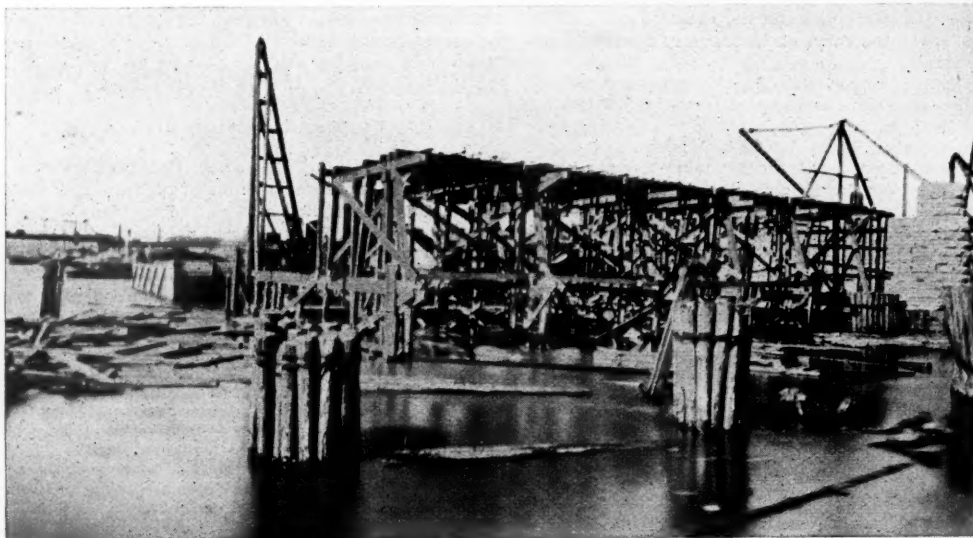
After driving the first three bents of piles, their length was increased to 60 ft., in order to reach good bottom, and all piles are reported driven to 2 in. refusal with a 20 ft. fall of hammer. In the 5th and 6th bents from the shore the number of piles was increased to nine, and in each of the 7th, 8th and 9th bents, eleven piles were used. The bents were

the traveler southward, and carrying with them bent 9, one-half of bent 6, and the scaffold upon which the masons were working. The piles appear to have broken off at the river bottom, except two piles of bent 9, which still stand with their tops about 3 ft. 6 in. below the piles of the remaining bents, and are reported to have been driven to hard bottom, and sawed off short, but had not yet been blocked under the cap.

The cause of the accident is unknown. Among others explanations it has been suggested that the bracing was incomplete, that the piles yielded, or that the fall rope became caught in hoisting and

should have been drawn, while it may be possible that occasionally wheels are scrapped which are still good for a thousand miles.

The writer has recently had occasion to ascertain how the meaning of the section referred to is construed at different places. At one shop wheels are drawn when the "hollow" of the tread reaches $\frac{1}{4}$ in. below the original contour, at another $\frac{3}{16}$ in. is considered sufficient, at still another wheels are not renewed under this section unless worn through the chill besides. These limits, as well as other intermediate ones used elsewhere, are apparently arbitrarily established, no valid reason being given for



Willis Avenue Bridge, New York City—After Failure on April 11.

pulled the derrick over; or, as one bewildered investigator suggests, "an act of Providence." That there was some rational cause there can be no doubt, but it can only be ascertained after a thorough investigation. The trestle appears well braced, and eleven piles driven to 2 in. refusal would leave little possibility of further settlement. If the traveler had been pulled over by the fall rope, it is extremely improbable that bents 7 and 8 would have gone with it. The results of the investigation must be awaited for an explanation.

Hollow Car Wheel Treads.

Section 7 of Rule 3, in the M. C. B. Code for the interchange of cars, is the only one in the book which is based entirely on the judgment of the inspector. All other sections of this rule are founded on some definite fact or figure, by which the inspector may be guided in his work. The section referred to reads as follows: "Tread worn hollow: If the tread is worn sufficiently hollow to render the flange or rim liable to breakage." It is evident that a cautious inspector may send a car to the shop for what he considers "sufficiently hollow" tread, while the foreman of the car shop may differ with him and deem the wheel still safe. Vice versa, the inspector may take chances on wheels which in the foreman's opinion

the prevailing practice, except of course in the last mentioned case.

Looking at the question from an engineer's point of view, however, it seems desirable not to allow the tread to wear beyond a certain point. Take, for instance, the conditions shown in the accompanying diagram, Fig. 1, which represents a cross section of

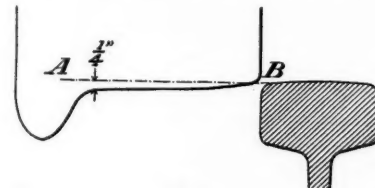


Fig. 2.

the rails in a stiff rail frog at a distance of one foot from the main rail point. If the tread of the wheel is worn so much that the outside of the rim is not elevated above the rail, the wheel will act as a wedge between the rail and the guard rail, as shown. Besides exposing the frog to damage, this condition is also favorable for breaking off chips from the outside of the rim by forcing it against the inside of the rail head. It will be remembered that it was principally for the purpose of reducing this tendency to chip off at that point, that the increased coning of the wheel for a distance of $1\frac{1}{4}$ in. from the outside of the rim was adopted by the M. C. B. Association. This advantage of the coning will be lost, however, the moment the corner of the wheel-rim is allowed to run below the level of the corner of the rail-head, as shown in Fig. 1. It would consequently be advisable to confine the permissible wear of the tread to the iron below the horizontal line A-B in Fig. 2. If the frog point is not worn too low, the difference in its height relative to the rail would then probably be

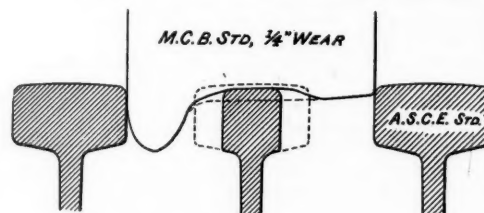


Fig. 1.

erected as planned except that additional X bracing was put in every alternate bent of piles and the diagonal stay braces, used in erection, were left in every panel of the trestle bents.

Eight bents had been erected complete and braced. The traveler stood some 50 ft. high, on bents 7 and 8. Trestle bent 9 had been hoisted into position, and the 12-in.x12-in. string pieces had been bolted in place. The scaffold on which the masons were pointing the pier was swung on the side next to the falseworks.

The traveler had just placed the last 8-in.x16-in. stringer on the deck, and the chain had been unhooked, when bents 7 and 8 collapsed, overturning

are worn too hollow for safety. The meaning of the expression "sufficiently hollow" is thus dependent on this new quantity, "the personal element," which has so recently come to the front in the papers and discussions of divers railroad clubs and associations.

It is a question, however, whether or not the ordinary inspector should properly be expected to decide for himself a point of structural strength, such as is usually referred only to technically educated men or those of long practical experience. There is no doubt that the inspectors generally do their work to the satisfaction of their employers, but still much damage to track and rolling stock has certainly been caused by allowing wheels to remain in service that

taken care of by the round corners of the wheel rim and the rail-head. Unless the tread is worn to an abrupt corner, this limit of wear will, it is believed, insure the track as well as the wheel from damage caused by hollow tread.

As will be seen in Fig. 2, the line A-B would not allow the same amount of wear at all points of the contour of the tread, but at the throat it would give $\frac{1}{4}$ in., decreasing from there to the heel. E. G.

English Electric Railroads.

Large Tramway Power Houses.

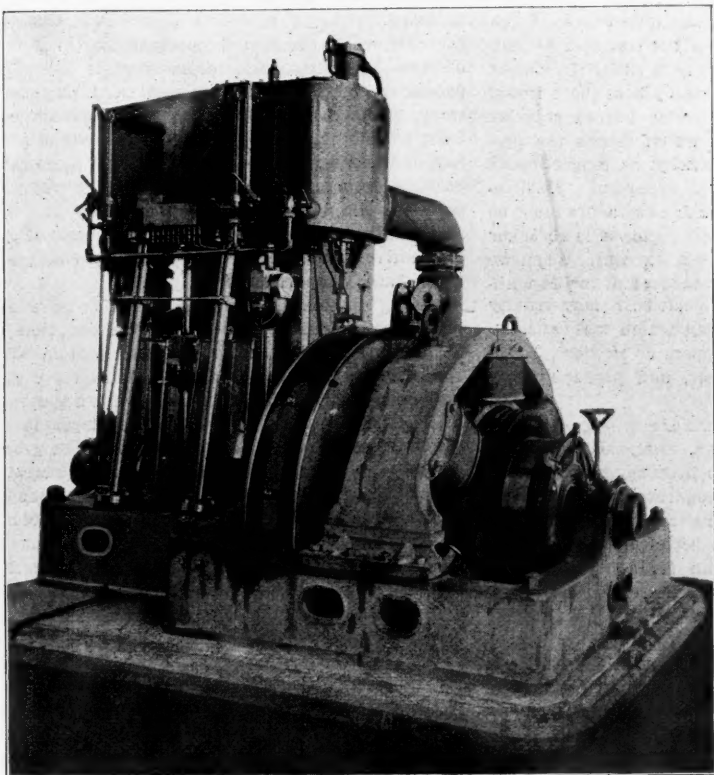
There are at present in the hands of the builders some contracts for large power houses. The Bristol Tramway & Carriage Co. is preparing to make a number of extensions. The Liverpool Corporation will, within about 12 months, have completed a new generating station at Pumpfields, to be used for electric lighting extensions, but in addition, power will be

of lighting and railroad panels, the same machines being interchangeable in railroad and lighting service. The city is supplied with lighting current at 220 volts, the three-wire system of distribution, with 440 volts across the outers, being used. The battery and regulators are connected in the neutral, so as to take care of any balancing current. A motor generator, consisting of a motor and two generators (220 volts), on the same bed-plate will take the day load from the main generators which also act as regulators when a single 440-volt generator is supplying the lighting current direct.

Seaside Lines.

During the past few months some attention has been given to the plans for equipping some of the electric lines at seaside towns, and for connecting two or more seaside summer resorts. On a number of the proposed lines the traffic would be very heavy in the summer, but the business would amount to practically nothing at other times of the year. One such scheme is to connect Lowestoft, Yarmouth and Southwold on the east coast, another to join Ramsgate, Margate and Broadstairs, another at Clacton and Frinton, Folkestone, Sandgate and Hythe.

On Nov. 25 last, the Railroad Gazette described in some detail the Blackpool and Fleetwood tramroad, opened a few months ago. One of the generating sets in the power house of this line is shown in the accompanying engraving.



Blackpool & Fleetwood Direct Coupled Generator.

provided for the tramways which are soon to be equipped with electricity. In this connection it is worth noting that the Corporation has under consideration a plan drawn up by its engineer, which provides for $8\frac{1}{2}$ miles of new track, and $18\frac{1}{2}$ miles of existing lines are to be worked by electricity.

The Dublin electric tramway power house at Ringsend will be the largest of its kind in the United Kingdom. The building will be entirely of steel, which is being supplied by Riter & Conley, of Pittsburgh, Pa. Two steel smokestacks, 200 ft. in height, have been completed for the power station. There will be a large boiler and engine house, the steel columns of the superstructure being over 60 ft. high. The main building will have a width of 80 ft. inside, with a steel roof in a single span extending to a length of 200 ft. Coal for fuel will be taken from vessels in Ringsend basin and deposited in hoppers in the roof. The station will be used for supplying current to the company's tramways. The company now works 13 miles electrically, and 34 miles by horses. Various lines are being converted for electric working, and new lines will be built. It may be safely conjectured that the power house equipment will be made in America.

The Cork Combined Lighting and Traction Plant.

The City of Cork is now provided with some electric lines, the current for both the road and electric lighting being generated at the power house of the Cork Electric Tramway Co., which recently completed 11 miles of track.

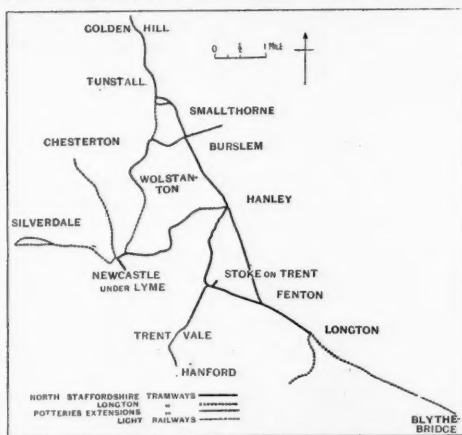
Mr. Beverley Griffin, A. M. I. C. E., the Cork resident engineer, recently gave some interesting details of the power house. To obtain a foundation, 137 pitch-pine piles 12 in. x 12 in. were driven 37 ft. below the surface level of the street at 5 ft. centers placed zig-zag, and on these concrete 6 to 1 was laid. The walls are of 18-in. brickwork with pilasters for carrying the overhead gantry crane. An additional pile was driven under each pilaster. The station is 100 ft. long x 104 ft. There is an engine and boiler house, with battery room, car shed and repair shop, covering an area of about 12,000 sq. ft. The boiler room contains three Babcock & Wilcox boilers, each of 2,531 sq. ft. heating surface, and capable of evaporating 8,000 lbs. of water per hour. There is an auxiliary heater, combined hot well and filter tank, and a duplicate set of Edmiston filters. In the engine room there are three McIntosh & Seymour tandem compound engines direct connected to 200 k.w. generators running at 150 revolutions per minute. Two Wheeler (Admiralty type) standard surface condensers, each having a capacity of from 8,000 to 12,000 lbs. of steam per hour, are used. Compound feed water pumps are in the engine room.

The battery room contains 256 Tudor cells, capable of discharging at 110 amperes for 7 hours. There is a booster of suitable capacity for regulating the charge of cells. The switchboard has a combination

compound condensing engines direct coupled to Mather & Platt multipolar type generators (voltage 505). The total capacity of the plant is about 1,000 h. p.

Edinburgh Cable Trams.

Some notes on the extensive cable lines of the city of Edinburgh are not without interest, particularly in view of the fact that this system, when its extensions have been completed, will be nearly the largest of its kind in the world. The hilly nature of the city is responsible for the adoption of the cable. When the Sunderland Corporation was looking into cable traction last fall, Mr. W. N. Colam rendered considerable assistance and gave much data from which we glean some particulars. Ten years ago the cable was introduced, and the lines were bought over by the corporation five years ago at a price which yielded 30 per cent. profit over the original cost of construction.



Lines of the Potteries (British) Electric Traction Co.

From that time extensions have been going on, and other cable lines bought, so that the length of lines which have been, or are about to be changed to cable are in Edinburgh 38.708 miles of single track, Portobello 4.220 miles, and Leith 4.5 miles; a total of 47.428. The Edinburgh Corporation is to purchase the Leith lines and equip them. The total expenditure on the Edinburgh cable trams when completed will be over \$35,000,000, and the present extensions will be ready by April next. The principal power station is situated in Tollcross, from which all the cables in the west and southwest districts will be worked. There are three pairs of horizontal, compound, non-condensing engines, these engines being attached to one line of main shafting on which are mounted two 14 ft. 6 in. dia. grooved pulleys, so that any two engines can be geared to work the two pulleys. The pulleys carry 32 $\frac{1}{2}$ in. dia. ropes, and have a speed of 45 revolutions per minute.

Although at present the maximum speed of the cables is six miles an hour (car speed $4\frac{1}{2}$ miles), this, when the undertaking is completed, will be increased to eight miles (car speed 6 $\frac{1}{2}$ miles), while on the Portobello section there will be a speed of nine miles, if the Board of Trade can be induced to give its consent. Where the traffic is very heavy, auxiliary cables from the main cables will reduce the speed to four miles an hour, or less. The cost per car mile, including every charge except interest on capital and depreciation, is stated to be 5.2d.; adding 2.471d. for interest and sinking fund, we get 7.671 pence per car mile. The receipts have been 10.13d. = 2.458d. net profit.

Potteries Tramways.

The lines of the Potteries Electric Traction Co. (which is one of the many off-springs of the British Electric Traction Co.), are approximately 33 miles in length, but at present only about 20 miles of road has been electrically equipped, and cars will be running soon. The 33 miles are made up as follows:

Tramways authorized by special provisional order, 14 miles; light railways, authorized by special light railways order, 12 miles; tramways of the North Staffordshire Tramways Co., taken over by the new company, 7 miles. In each case the municipal authorities have power to buy at certain times. The 14 mile section can be bought only under the provisions of the 1870 Tramways Act, but the 12 and 7 mile sections are held for 35 and 21 years respectively. All these sections will be worked together on a 4 ft. uniform gage, giving a continuous service throughout.

The various districts touched have an estimated population of nearly 400,000, and the promoters consider that when all the lines are working, the net profits after providing for all expenses, except depreciation, will be at least £40,000 a year. The importance of the scheme lies in the fact that it covers the main roads connecting all the principal towns in the thickly populated Potteries districts.

The electrical equipment of the lines of the North Staffordshire Tramways Co., mentioned above, is being carried out by the Brush Electrical Engineering Co., Ltd., at a contract price of £57,418. The contract for the 14 miles has been let to Messrs. Dick, Kerr & Co., who are now active in building many electric roads in England. Their part of the contract amounts of £75,590. There yet remain a number of contracts for the remainder of the work.

The undertaking is really one of the many systems promoted by the British Electric Traction Co., which has borne the expenses of arranging with the various local authorities (by no means an easy matter), and other parties interested in the scheme, obtaining Parliamentary powers, etc. For this, £66,660 in shares is allotted to it. The nominal capital of the Potteries Electric Traction Co. is £400,000, and the directors have power to issue half that sum in debentures.

The terms "light railways," "railways" and "tramways" have here been used with the meaning given to them in England. They are all tramways, some taking the name "light railways" merely to get the requisite legislation carried out under the Light Railways Act for the sake of saving a large percentage of promotion fees and for rushing the scheme through with a minimum of delay. "What is a light railway," is becoming something of a conundrum in England. Some hold that a tramway is a line confined within the limits of a certain borough or town, a light railway being a suburban or inter-town system of communication. But this is not strictly true, as lines of both kinds are being sanctioned by the Light Railway Commissioners; furthermore, the Board of Trade has in official writing stated that a system confined within a borough may be termed a light railway, and such a proposal need not necessarily be introduced under the old Tramways Act. The point is being raised in so many parts of the country just now that it possesses a special interest.

Glasgow Tramways.

The Corporation of Glasgow, finding its experimental trolley system very successful, is now considering a scheme for the equipment of the entire city lines—the work to be completed by the year 1901, when Glasgow will be en fête with a great International Exhibition. Mr. H. F. Parshall will draw up a report on the most efficient and economical system of working electrically about 70 or 80 miles. His report, which goes into the details connected with the scheme, amounts to a recommendation that the multiphase system of distribution should be used, current being transmitted from a single generating station by high tension multiphase, to substations in some of the existing car sheds and stables. This has been advised because it was believed to be found the most economical to work, involves less capital outlay, takes less time to install, will fulfill the Board of Trade's requirements and is of a type the least likely to be superseded when traffic becomes very heavy and the lines are extended. The voltage at the generating station would be 6,500, that of the trolley wires 500. The Corporation Committee advises the Corporation to adopt this scheme, and it is almost sure to pass. For years it has been a vexed question at Glasgow whether the Corporation's electric lighting and the electric trams should not be worked from a combined plant. The latest proposal is to keep the two separate.

ALBERT H. BRIDGE.



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EDITORIAL ANNOUNCEMENTS.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussion of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially either for money or in consideration of advertising patronage.

Elsewhere we print a short description of a box car of 100,000 lbs. capacity, and this naturally raises the question of the weight per lineal foot of these heavy tonnage cars, as affecting bridges and superstructure. If the Southern Pacific 100,000 lbs. capacity box cars described are loaded with 77,000 lbs., the weight per lineal foot would be the same as for a 34-ft. box car loaded with 60,000 lbs. In other words, the Southern Pacific box car will carry 17,000 lbs. more paying freight, without any additional weight per lineal foot. If, however, this car is loaded to its maximum capacity, viz., 100,000 lbs., it will weigh 578 lbs. more per lineal foot than a 34-ft. box car loaded with 60,000 lbs. These figures are based on the weight of 34-ft., 60,000-lbs. box cars taken from various recent specifications, the average weight of which is 33,550 lbs.

On the 27th of March the Metropolitan Street Railway Company made a proposition to the Board of Rapid Transit Commissioners of New York City offering to build the underground rapid transit railroad. In writing of that occurrence in our issue of March 31, we said: "This is the most hopeful event for rapid transit in the city of New York that has happened for years. The Metropolitan Company is in earnest, and is acting in good faith. . . . It remains to be seen whether this excellent plan will be defeated in the courts and in the Legislature. It will be opposed by at least three, more or less dangerous, elements. The business rivals, the strikers and the professional friends of man will naturally try to defeat this new project." It appears now that they have succeeded. The Metropolitan Company has withdrawn its proposition. The Commissioners have still before them certain fake propositions in which the names of excellent men have been used to mislead the public, but nobody who knows the circumstances thoroughly takes such propositions seriously. It is apparently necessary that the citizens of New York should suffer disappointment and inconvenience a while longer before they acquire a due sense of proportion. Meanwhile, strikers and social philosophers will be able to make them think that they can get something for nothing.

Chairman Knapp, of the Interstate Commerce Commission, has told a reporter about the recent action of the Commission in putting itself on better terms with the railroads, and we copy the principal part of the interview in another column. Mr. Knapp says that the Commission is going to investigate the "midnight tariffs" by which the recent violent fluctuations in export grain rates have been effected, and that the inquiry into the export-rate irregularities will probably take all summer. The facts are pretty well known. The gist of the question seems to be, shall the railroads be allowed to vary their rates to accommodate themselves to the

constantly-changing demands of shippers. If fluctuations are to be allowed at all, it seems to be inevitable that they shall be sudden and extreme. That is the way ocean rates fluctuate; and the railroads are, at least in a great many cases, in about the same situation as the vessel men. This week traffic may be heavy and next week thousands of cars and scores of men and many locomotives may be idle. The lowest rate that a railroad can afford to accept when its men and facilities are idle is very much below what it can afford to establish as an unvarying rate, even on the coarsest freight, to be maintained for months at a time. If violent fluctuations are to be forbidden by law, there would seem to be no practicable course but to prohibit "midnight tariffs" entirely; which means the prohibition of changes of tariffs except on longer notice and on publication in local newspapers. "Publication" is a farce if, as at present, new tariffs must be watched for as a sheriff watches for a lawbreaker whom he wishes to serve with a warrant. When we come to consider a rigid maintenance of tariffs without variation for protracted periods, it may readily be agreed that to devise a plan which will cause no injurious disturbance to shippers or carriers, Judge Knapp will need all summer, and perhaps many summers.

Commissioner Knapp says, that, although the Commission will continue to investigate complaints it does not propose to inaugurate a spy system. This suggests the query whether the dual character of the Commission had not better be changed. It does indeed seem incongruous for a high court to employ detectives; but it is to be remembered that while some of the functions of the Commission have led many people to look upon it as a sort of supreme court, other functions seem to class it in a lower grade; the grade of petty criminal courts that take a physical hold on lawbreakers at short range. The term "spy" seems to be regarded as particularly opprobrious; but what is the difference between a spy and a detective? Unless some improvement is made in the law, it will be necessary to employ spies or some other breed of sharp-witted men, if violations are to be discovered. The principal fault to be found with the "agents" or so-called spies heretofore employed by the Commission has been that they did not succeed in catching many lawbreakers. It does not appear that they have ever harmed law-abiding railroad men, or even offended them. It is natural for Mr. Knapp to shrink from setting a man to watch a respectable railroad manager to detect him in disobedience to a criminal law; but it seems to be generally admitted that the hundreds of infractions of the sixth section of the interstate commerce law that have been so notorious lately, have been committed by just such managers. How is illegal rate-cutting to be discovered? Possibly Judge Knapp has in mind the Texas plan. The Commissioners of that state did not employ a spy—or, if they did, he did not report anything—but a spy who went into business on his own hook gave the Commission some evidence, and on this a number of railroads were mulcted out of \$65,000.

Long Stroke Locomotives.

While it is an old question, whether to increase the length of the stroke or increase the diameter of the cylinders to get greater cylinder power, present practice would seem to indicate a tendency toward longer stroke engines. In some recent discussions several reasons have been given for doing one thing or the other which at first seem plausible,

trains at higher speeds, irrespective of the relative length and diameter of the cylinders.

There is at least one set of conditions where the designer is left no choice between increasing the diameter of the cylinders or the length of stroke, such as the case of a compound locomotive where the low-pressure cylinders (or cylinder) reach the limits of the clearances of the rod. But with the single expansion locomotives he is free to choose between either method and in what follows this is assumed. It might first be said, however, that it is now generally considered questionable practice to design single expansion locomotives to use steam pressures higher than 180 lbs. under ordinary conditions, although the boiler may with advantage be built to carry 200 lbs. pressure for use when starting, or when working on heavy grades. If, as many persons assume, the economical limit of steam pressure for single expansion locomotives has been reached, then further increases in the power of such locomotives must be brought about by changes in the cylinder proportions.

Taking up some of the reasons which have been given, for increasing the stroke, the one that the long stroke improves the steam distribution, where there is slack in, or springing of, the valve gear, may be mentioned first, as it is quickly disposed of. Those who are familiar with valve diagrams will see at once that while such effects might be greater or less, depending upon the throw of the eccentric, yet the length of the stroke is entirely independent of the valve travel and does not enter as a factor in the way suggested. Also, it at first seems plausible that a reduction in the clearance space follows from increasing the stroke and leaving constant the cylinder diameter and the "striking distance" at the ends. This would be true if it were not necessary at the same time to increase the length of the steam passages; but with the usual arrangement of ports, where flat slide valves are used, just the reverse might reasonably be expected. That is the volume added by lengthening the steam passages is more than that saved by using a cylinder of smaller diameter. It is quite possible, however, that with recent designs of piston valves where the passages are short and direct, joining the steam chest near the ends, the clearance spaces might be kept practically the same as those of similar short stroke engines having piston valves. It need only be mentioned that the effect of excessive clearance has been shown on the Purdue testing plant to result in a marked lowering of the efficiency of a single expansion engine.

The most attractive feature of lengthening the stroke rather than increasing the cylinder diameter is that the pressure on the pistons are less, resulting in smaller stresses in the moving parts of the engine, so that the reciprocating parts can be lightened and a smaller excess counterbalance can be used, while the internal friction of the engine is decreased; to partially offset these advantages, we have an increase of piston speed. It has been suggested that the piston speed of long stroke engines can be kept down by increasing the diameter of the driving wheels, but this in turn reduces whatever gain there might otherwise have been in tractive power. It is safe to say that the tractive power cannot be increased by lengthening the stroke unless the piston speed is increased.

The relations existing between the several factors which determine the cylinder proportions are not readily seen off hand, and the effects of changes in the length of the stroke, the diameter of the cylinders and the size of the driving wheels are shown in the table, where certain proportions have

	A	B	C	D	E
Cylinders, in. x in.	18 x 24	18 x 30	18 x 30	20 x 24	20 x 24
Driving wheels, diameter, in.	60	60	75	60	75
Maximum speed, m. p. h.	60	60	60	60	60
Corresponding piston speed, ft. per min.	1,344	Inc. 25%	1,344	1,344	Dec. 20%
Corresponding revolutions per minute	336	336	269	336	260
Theoretical tractive effort * lbs.	22,032	Inc. 25%	22,032	Inc. 25%	22,032
Total maximum pressure on pistons, * lbs.	86,520	86,520	86,520	Inc. 25%	Inc. 25%
Cylinder volume, cu. in.	6,107	Inc. 75%	Inc. 25%	Inc. 25%	Inc. 25%
Cylinder surface sq. in.	1,866	Inc. 18 2/3%	Inc. 18 2/3%	Inc. 15 3/5%	Inc. 15 3/5%

* The mean unit pressure is taken as 85 per cent. of 20 lbs.

but those who will take the trouble to think about these arguments will find that there is not much in some of them and nothing at all in others, and that both methods offer some advantages and disadvantages which very nearly balance. Possibly the long stroke feature has lately had too much credit. At least, some of the long stroke passenger locomotives which have been reported to show a much better performance than those with shorter stroke have had larger boilers; this in itself is probably sufficient to account for hauling heavier

been assumed for convenience, and afterward increased by 25 per cent.

By this table it will be seen that B has 25 per cent. longer stroke than A, while the other dimensions are the same, resulting in a corresponding increase in the tractive power and the piston speed. C has the long stroke as well as driving wheels 25 per cent. larger than A, and this combination gives the same tractive power and piston speed as A, but a reduction by 20 per cent. of the number of revolutions per minute of the drivers. As so many re-

cent locomotives are proportioned in this manner special attention may be called to the fact that the only return for the increased weight of the wheels and cylinders is in the smaller number of revolutions of the drivers when running at a given speed.

The effect of increasing the area of the piston 25 per cent., or making the diameter about 20 in., is shown by D, which is directly comparable with B; in this case tractive power is obtained at the expense of corresponding greater piston pressures while the piston speed is not changed. In the same way E and C are comparable, and the principal advantages of large diameter cylinders are brought out. At the same speed the piston velocity of E is 20 per cent. less than that of C, or with the piston velocity of C, at 60 miles per hour, E would make 75 miles per hour. Stationary engines of sizes similar to those given have piston velocities of about 600 ft. per minute, so it is seen that locomotive practice is already pretty well advanced. It should also be noted that the assumed increase in diameter is accompanied by an increase of the surface of the cylinder of 15.3 per cent., whereas in the long stroke engine the surface is increased by 18.2 per cent. The fact that a cylinder of given volume having a length equal to its diameter presents a minimum radiating surface is probably one of the best arguments against going to extremes in the length of the stroke; another objection that has been raised where the wheels are small is that the crank pins are brought close to the track.

With single expansion locomotives, having the common stroke of 24 in., it would seem that greater tractive effort can best be obtained by increasing the diameter of the cylinders up to such a point that the diameter equals the stroke. If it is only desired to reduce the number of revolutions per minute by using large driving wheels there are two ways: Larger diameter cylinders with heavier reciprocating parts, larger stresses to care for and increased internal friction; or a long stroke and smaller pistons and pressures, but accompanied by piston speeds equal to or greater than those now considered allowable, a larger cylinder surface and probably greater clearance spaces. As we said before, in such a case the advantages and disadvantages are not far from equal, with possibly better reasons for increasing the diameter of the cylinders than the stroke.

The Cincinnati Northern is now paying the station agents on the Ohio Division partly by commissions on ticket sales. In revising the salaries a fixed sum per month was prescribed for each agent, and, in addition to this, he is allowed a percentage on ticket sales varying from 2½ per cent. to 15 per cent. The percentage at each station was fixed at a rate which it was calculated would, on the basis of the sales for the preceding year, make the whole income of the agent the same as before. General Passenger Agent Schindler informs us that the arrangement is entirely satisfactory both to the agents and to the company. This arrangement has been in force at the smaller stations on the Wabash road for several years, and we understand that it is regarded as very satisfactory. The percentages on the Wabash range from 1 to 10, which would seem to indicate that the minimum, or fixed sum, is larger than on the Cincinnati Northern. On the Missouri Pacific and the Iron Mountain the same plan is in force at about 90 per cent. of the smaller stations, and the officers of the road, like those of the others mentioned, speak favorably of the plan.

The Trunk Line Association has promulgated rates for grain from Buffalo to New York for the coming summer. These rates, which include elevator charges at Buffalo (five mills), are 3.50 cents a bushel for wheat, 3.25 for rye, 2.75 for corn and 2.50 for oats. The tariff calls these "minimum rates," and it is reported that the roads are still demanding considerably more than the prices named. Canal competition will not be effective for some time, and it is said that Lake grain will not start from Chicago before May 1, as there is much ice in the straits. The rates from Buffalo include lighterage at New York, the regular rate for which is three cents per 100 lbs. But if the lighterage should cost only one cent, the amount accruing to the railroads for the rail haul would be only 2½ cents a bushel for wheat, equal to 41-6 cents per 100 lbs., and 19 mills per ton per mile. This is a very low rate per mile, but no lower than was made (by two or more roads, we believe), as for back as 1895. Quite likely it is not as low for the rates then made were said to have been less than 2½ cents a bushel some of the time; and, so far as appears, the 2½ cents included lighterage at New York. The average rate on wheat by canal for the whole of the season of 1898 was 2.8 cents a bushel.

The annual report of the Canadian Department of Railways and Canals for the year ending June 30, 1898, is just received. The number of miles of rail-

road completed was 16,870, and the miles in operation were 16,618. The increase during the year was 183 miles, and of the total mileage there are 553 miles of double track. The gross earnings were \$59,715,000, an increase of \$7,362,000. The net earnings were \$20,578,000, an increase of \$3,393,000. The volume contains minute statistics of the railroads and canals, in general and in detail, covering finance, traffic and the results of working.

The Standard Code of Train Rules of the American Railway Association for Single Track.

[Adopted at Detroit April 12, 1899.]
(Form of order putting rules in effect.)

The rules herein set forth govern the railroads operated by the.....Company. They take effect.....superseding all previous rules and instructions inconsistent therewith.

Special instructions may be issued by proper authority.
(Name).....
(Title).....

General Notice.

To enter or remain in the service is an assurance of willingness to obey the rules.

Obedience to the rules is essential to the safety of passengers and employees, and to the protection of property.

The service demands the faithful, intelligent and courteous discharge of duty.

To obtain promotion capacity must be shown for greater responsibility.

Employees, in accepting employment, assume its risks.

General Rules.

A. Employees whose duties are prescribed by these rules must provide themselves with a copy.

B. Employees must be conversant with and obey the rules and special instructions. If in doubt as to their meaning they must apply to proper authority for an explanation.

C. Employees must pass the required examinations.

D. Persons employed in any service on trains are subject to the rules and special instructions.

E. Employees must render every assistance in their power in carrying out the rules and special instructions.

F. Any violation of the rules or special instructions must be reported.

G. The use of intoxicants by employees while on duty is prohibited. Their habitual use, or the frequenting of places where they are sold, is sufficient cause for dismissal.

H. The use of tobacco by employees when on duty in or about passenger stations, or on passenger cars, is prohibited.

J. Employees on duty must wear the prescribed badge and uniform and be neat in appearance.

K. Persons authorized to transact business at stations or on trains must be orderly and avoid annoyance to passengers.

L. In case of danger to the company's property employees must unite to protect it.

Definitions.

Train.—An engine, or more than one engine coupled, with or without cars, displaying Markers.

Regular Train.—A train represented on the Time-table. It may consist of Sections.

Section.—One of two or more trains running on the same schedule displaying signals or for which signals are displayed.

Extra Train.—A train not represented on the Time-table. It may be designated as—

Extra—for any extra train, except work extra.

Work extra—for work train extra.

Superior Train.—A train having precedence over other trains.

A train may be made superior to another train by right, class or direction.

Right is conferred by train order; class and direction conferred by time-table.

Right is superior to class or direction. Direction is superior as between trains of the same class.

Train of Superior Right.—A train given precedence by train order.

Train of Superior Class.—A train given precedence by time-table.

Train of Superior Direction.—A train given precedence in the direction specified in the time-table as between trains of the same class.

Time-Table.—The authority for the movement of regular trains subject to the rules. It contains the classified schedules of trains with special instructions relating thereto.

Schedule.—That part of a time-table which prescribes the class, direction, number and movement of a regular train.

Single Track.—A track upon which trains are operated in both directions by time-table or by train orders.

Siding.—An auxiliary track for meeting or passing trains.

Yard.—A system of tracks within defined limits provided for the making up of trains, storing of cars and other purposes, over which movements not authorized by time-table, or by train order, may be made, subject to prescribed signals and regulations.

Yard Engine.—An engine assigned to yard service and working within yard limits.

Pilot.—A person assigned to a train when the engine-man or conductor, or both, are not fully acquainted with the physical characteristics, or running rules of the road, or portion of the road, over which the train is to be moved.

Standard Time.

1. Standard Time obtained from.....
observatory will be telegraphed to all points from designated offices at..... m. daily.

NOTE.—In order to detect possible errors at junction points and to secure uniformity, the Committee recommends that the time be disseminated to all points at the same hour. The Committee considers it of great importance that the time be obtained from some observatory of recognized standing.

2. Watches that have been examined and certified to by a designated inspector must be used by conductors

and enginemen. The certificate in prescribed form must be renewed and filed with..... every.....

(Form of Certificate.)

CERTIFICATE OF WATCH INSPECTOR.

This is to certify that on.....13.....
the watch of.....
employed as.....
on the..... R.....
was examined by me. It is correct and reliable, and in my judgment will, with proper care, run within a variation of thirty seconds per week.

Name of Maker.....
Brand.....
Number of Movement.....
Open or hunting case.....
Metal of case.....
Stem or key winding.....
Signed,.....
Inspector.

Address.....

3. Watches of conductors and enginemen must be compared, before starting on each trip, with a clock designated as a Standard Clock. The time when watches are compared must be registered on a prescribed form.

NOTE.—The conditions under which conductors and enginemen whose duties preclude access to a standard clock are required to obtain standard time, vary so much on different roads that the Committee recommends that each adopt such regulation to cover the case supplementary to this rule, as may best suit its own requirements.

Time-Tables.

4 (A). Each time-table, from the moment it takes effect, supersedes the preceding time-table.

A train of the preceding time-table thereupon loses both right and class, and can thereafter proceed only by train order.

No train of the new time-table shall run on any division until it is due to start from its initial point, on that division, after the time-table takes effect.

4 (B). Each time-table, from the moment it takes effect, supersedes the preceding time-table. A train of the preceding time-table shall retain its train orders and take the schedule of the train of the same number on the new time-table.

A train of the new time-table which has not the same number on the preceding time-table shall not run on any division until it is due to start from its initial point, on that division, after the time-table takes effect.

NOTE.—The Committee has recommended two forms of Rule 4, leaving it discretionary with each road to adopt either, as best suits its own requirements.

5. Not more than two times are given for a train at any point; where one is given, it is, unless otherwise indicated, the leaving time; where two, they are the arriving and the leaving time.

Schedule meeting or passing points are indicated by figures in full face type.

Both the arriving and leaving time of a train are in full-faced type when both are meeting or passing times, or when one or more trains are to meet or pass it between those times.

Where there are one or more trains to meet or pass a train between two times, or more than one train to meet a train at any point, attention is called to it by.....

6 The following signs when placed before the figures of the schedule indicate:

"s"—regular stop;
"f"—flag stop to receive or discharge passengers or freight;
"M"—stop for meals;
"l"—leave;
"a"—arrive.

Signal Rules.

7. Employees whose duties may require them to give signals, must provide themselves with the proper appliances, keep them in good order and ready for immediate use.

8. Flags of the prescribed color must be used by day, and lamps of the prescribed color by night.

9. Night signals are to be displayed from sunset to sunrise. When weather or other conditions obscure day signals, night signals must be used in addition.

VISIBLE SIGNALS.

Color.	Color Signals.	Indication.
(a) Red.	Stop.	Stop.
(b) —	Proceed, and for other uses prescribed by the Rules.	Proceed, and for other uses prescribed by the Rules.
(c) —	Proceed with caution, and for other uses prescribed by the Rules.	Proceed with caution, and for other uses prescribed by the Rules.
(d) Green and white.	Flag stop. See Rule 28.	Flag stop. See Rule 28.
(e) Blue.	See Rule 26.	See Rule 26.

11. A fusee on or near the track burning red must not be passed until burned out. When burning green it is a caution signal.

Hand, Flag and Lamp Signals.

Manner of Using.	Indications.
(a) Swung across the track.	Stop.
(b) Raised and lowered vertically.	Proceed.
(c) Swung vertically in a circle across the track, when the train is standing.	Back.
(d) Swung vertically in a circle at arm's length across the track, when the train is running.	Train has parted.
(e) Swung horizontally in a circle, when train is standing.	Apply air brakes.
(f) Held at arm's length above the head, when train is standing.	Release air brakes.

13. Any object waved violently by any one on or near the track is a signal to stop.

AUDIBLE SIGNALS.

14. Engine Steam Whistle Signals.
NOTE.—The signals prescribed are illustrated by "o" for short sounds; "—" for longer sounds. The sound of the whistle should be distinct, with inten-

sity and duration proportionate to the distance signal is to be conveyed.

Sound.	Indication.
(a) o	Stop. Apply Brakes.
(b) — — — —	Release brakes.
(c) — o o o	Flagman go back and protect rear of train.
(d) — — — —	Flagman return from west or south.
(e) — — — —	Flagman return from east or north.
(f) — — — —	When running, train parted; to be repeated until answered by the signal prescribed by Rule 12 (d). Answer to 12 (d).
(g) o o	Answer to any signal not otherwise provided for.
(h) o o o	When train is standing, back. Answer to 12 (c) and 16 (c).
(j) o o o o	Call for signals.
(k) — o o	To call the attention of trains of the same or inferior class to signals displayed for a following section.
(l) — — — o o	Approaching public crossings at grade.
(m) — — — —	Approaching stations, junctions and railroad crossings at grade.

A succession of short sounds of the whistle is an alarm for persons or cattle on the track, and calls the attention of trainmen to danger ahead.

15. The explosion of one torpedo is a signal to stop; the explosion of two not more than 200 feet apart is a signal to reduce speed, and look out for a stop signal.

16. AIR-WHISTLE OR BELL-CHORD SIGNAL.

Sound.	Indications.
(a) Two.	When train is standing, start.
(b) Two.	When train is running, stop at once.
(c) Three.	When train is standing, back the train.
(d) Three.	When train is running, stop at next station.
(e) Four.	When train is standing apply or release air brakes.
(f) Four.	When train is running, reduce speed.
(g) Five.	When train is standing, call in flagman.
(h) Five.	When train is running, increase speed.

Train Signals.

17. The head-light will be displayed to the front of every train by night, but must be concealed when a train turns out to meet another and has stopped clear of main track, or is standing to meet trains at the end of double track or at junction points.

18. Yard engines will display the head-light to the front and rear by night. When not provided with a head-light at the rear, two white lights must be displayed. Yard engines will not display markers.

19. The following signals will be displayed, one on each side of the rear of every train, as markers, to indicate the rear of the train: By day a green flag. By night, a green light to the front and side, and a red light to the rear, except when the train turns out to be passed by another and is clear of main track, when a green light must be displayed to the front, side and to rear.

20. All sections of a train, except the last, will display two green flags and, in addition, two green lights by night, in the places provided for that purpose on the front of the engine.

21. Extra trains will display two white flags and, in addition, two white lights by night, in the places provided for that purpose on the front of the engine.

22. When two or more engines are coupled to a train, the leading engine only shall display the signals as provided in Rules 20 and 21.

23. One flag or light displayed where in Rules 19, 20 and 21 two are prescribed will indicate the same as two; but the proper display of all train signals is required.

24. When cars are pushed by an engine (except when shifting or making up trains in yards) a white light must be displayed on the front of the leading car by night.

25. Each car on a passenger train must be connected with the engine by a communicating signal appliance.

26. A blue flag by day and a blue light by night, displayed at one or both ends of an engine, car or train, indicates that workmen are under or about it. When thus protected it must not be coupled to or moved. Workmen will display the blue signals and the same workmen are alone authorized to remove them. Other cars must not be placed on the same track so as to intercept the view of the blue signals, without first notifying the workmen.

Use of Signals.

27. A signal imperfectly displayed, or the absence of a signal at a place where a signal is usually shown, must be regarded as a stop signal, and the fact reported to the ———.

28. The combined green and white signal is to be used to stop a train only at the flag stations indicated on the schedule of that train. When it is necessary to stop a train at a point that is not a flag station for that train, a red signal must be used.

29. When a signal (except a fixed signal) is given to stop a train, it must be acknowledged as provided in Rule 14 (g).

30. The engine-bell must be rung when an engine is about to move.

31. The engine-bell must be rung on approaching every public road crossing at grade, and until it is passed; and the whistle must be sounded at all whistling-posts.

32. The unnecessary use of either the whistle or the bell is prohibited. They will be used only as prescribed by rule or law, or to prevent accident.

33. Watchmen stationed at public road and street crossings must use red signals only when necessary to stop trains.

Classification of Trains.

34. Trains of the first class are superior to those of the second; trains of the second class are superior to those of the third; and so on. Extra trains are inferior to regular trains of whatever class.

All trains in the direction specified in the time-table are superior to trains of the same class in the opposite direction.

35. Regular trains twelve hours behind their schedule time lose both right and class, and can thereafter proceed only by train order.

Movement of Trains.

36. A train must not leave its initial station on any division, or a junction, or pass from double to single track, until it is ascertained whether all trains due, which are superior, or of the same class, have arrived or left.

37. A train leaving its initial station on each division, or leaving a junction, when a train of the same class in the same direction is overdue, will proceed on its schedule, and the overdue train will run as provided in Rule 91.

38. A train must not start until the proper signal is given.

39. An inferior train must keep out of the way of a superior train.

40. A train failing to clear the main track by the time required by rule, must be protected as provided in Rule 99.

41. At meeting points between trains of the same class the inferior train must clear the main track before the leaving time of the superior train, and must pull into siding when practicable. If necessary to back in, the train must first be protected, as per Rule 99, unless otherwise provided.

42. At meeting points between trains of different classes the inferior train must take the siding and clear the superior train at least five minutes, and must pull into the siding when practicable. If necessary to back in, the train must first be protected as per Rule 99, unless otherwise provided.

An inferior train must keep at least five minutes off the time of a superior train in the same direction.

Note on Rules Nos. 38 and 39.—The Committee recommends that where greater clearance is necessary, Rule No. 38 should require a clearance of FIVE minutes, and Rule No. 39 or TEN minutes.

43. Trains must stop at schedule meeting or passing points, if the train to be met or passed is of the same class, unless the switches are right and the track clear. Trains should stop clear of the switch used by the train to be met or passed in going on the siding.

When the expected train of the same class is not found at the schedule meeting or passing point, the superior train must approach all sidings prepared to stop, until the expected train is met or passed.

44. Trains in the same direction must keep at least five minutes apart, except in closing up at stations or at meeting and passing points.

Note.—The Committee recommends that where greater clearance is necessary, Rule No. 91 should allow a clearance of TEN minutes or more.

45. A train must not arrive at a station in advance of its schedule arriving time.

A train must not leave a station in advance of its schedule leaving time.

46. A regular train which is delayed, and falls back on the time of another train of the same class, will proceed on its own schedule.

47. A train which overtakes a superior train or a train of the same class, so disabled that it cannot proceed, will pass it, if practicable, and if necessary will assume the schedule and take the train orders of the disabled train, proceed to the next open telegraph office, and there report to the ———. The disabled train will assume the schedule and take the train orders of the last train with which it has exchanged, and proceed to and report from the next open telegraph office.

48. A train must not display signals for a following section nor an extra train be run, without orders from the ———.

49. When signals displayed for a section are taken down at any point before that section arrives, the conductor will, if there be no other provision, arrange with the operator, or if there be no operator, with the switch-tender, or in the absence of both, with a flagman left there for the purpose, to notify all opposing trains of the same or inferior class leaving such point that the section for which the signals were displayed has not arrived.

50. Work extras will be assigned working limits.

51. Trains must approach the end of double track junctions, railroad crossings at grade, and drawbridges, prepared to stop, unless the switches and signals are right and the track is clear. Where required by law, trains must stop.

52. When a train stops or is delayed, under circumstances in which it may be overtaken by another train, the flagman must go back immediately with stop signals a sufficient distance to insure full protection. When recalled he may return to his train, first placing two torpedoes on the rail when the conditions require it.

The front of a train must be protected in the same way, when necessary, by the ———.

53. When the flagman goes back to protect the rear of his train, the ——— must, in the case of passenger trains, and the next brakeman in the case of other trains, take his place on the train.

54. If a train should part while in motion, trainmen must, if possible, prevent damage to the detached portions. The signals prescribed by Rules 12 (d) and 14 (f) must be given, and the front portion of the train kept in motion until the detached portion is stopped.

The front portion will then go back, to recover the detached portion, running with caution and following a flagman. The detached portion must not be moved or passed until the front portion comes back.

55. When cars are pushed by an engine (except when shifting and making up trains in yards) a flagman must take a conspicuous position on the front of the leading car and signal the engineman in case of need.

56. Messages or orders respecting the movement of trains or the condition of track or bridges must be in writing.

57. Switches must be left in proper position after having been used. Conductors are responsible for the position of the switches used by them and their trainmen, except where switchtenders are stationed.

A switch must not be left open for a following train unless in charge of a trainman of such train.

58. Both conductors and enginemen are responsible for the safety of their trains and, under conditions not provided for by the rules, must take every precaution for their protection.

59. In all cases of doubt or uncertainty the safe course must be taken and no risks run.

Rules for Movement by Train Orders.

60. For movements not provided for by time-table, train orders will be issued by authority and over the signature of the ———. They must contain neither information nor instructions not essential to such movements.

They must be brief and clear; in the prescribed forms when applicable; and without erasure, alteration or interlineation.

61. Each train order must be given in the same words to all persons or trains addressed.

62. Train orders will be numbered consecutively each day, beginning with No. — at midnight.

63. Train orders must be addressed to those who are to execute them, naming the place at which each is to receive his copy. Those for a train must be addressed to the conductor and engineman, and also to any one who acts as its pilot. A copy for each person addressed must be supplied by the operator.

64. Each train order must be written in full in a book provided for the purpose at the office of the ———; and with it recorded the names of

those who have signed for the order; the time and the signals which show when and from what offices the order was repeated and the responses transmitted; and the train dispatcher's initials. These records must be made at once, and never from memory or memoranda.

65. Regular trains will be designated in train orders by their numbers, as "No. 10," or "2d No. 10," adding engine numbers if desired; extra trains by engine numbers, as "Extra 798," with the direction when necessary, as "East" or "West." Other numbers and time will be stated in figures only.

66. To transmit a train order, the signal "31" or the signal "19" must be given to each office addressed, the number of copies being stated, if more or less than three—thus, "31 copy 5," or "19 copy 2."

[Note.—Where forms "31" and "19" are not both in use the signal may be omitted.]

67. A train order to be sent to two or more offices must be transmitted simultaneously to as many of them as practicable. The several addresses must be in the order of superiority of trains, each office taking its proper address. When not sent simultaneously to all, the order must be sent first to the superior train.

68. Operators receiving train orders must write them in manifold during transmission and if they cannot at one writing make the requisite number of copies, must trace others from one of the copies first made.

69. When a "31" train order has been transmitted, operators must (unless otherwise directed) repeat it at once from the manifold copy in the succession in which the several offices have been addressed, and then write the time of repetition on the order. Each operator receiving the order should observe whether the others repeat correctly.

Those to whom the order is addressed, except enginemen, must then sign it, and the operator will send their signatures preceded by the number of the order to the ———. The response "complete," and the time, with the initials of the ———, will then be given by the train dispatcher. Each operator receiving this response will then write on each copy the word "complete," the time, and his last name in full, and then deliver a copy to each person addressed, except enginemen. The copy for each engineman must be delivered to him personally by ———.

Note.—The blanks in the above rule may be filled for each road to suit its own requirements. On roads where the signature of the engineman is desired, the words "except enginemen," and the last sentence in the second paragraph may be omitted. If preferred, each person receiving an order may be required to read it aloud to the operator.

70. When a "19" train order has been transmitted, operators must (unless otherwise directed) repeat it at once from the manifold copy, in the succession in which the several offices have been addressed. Each operator receiving the order should observe whether the others repeat correctly. When the order has been repeated correctly by an operator, the response "complete," and the time, with the initials of the ———, will be given by the train dispatcher. The operator receiving this response will then write on each copy the word "complete," the time, and his last name in full, and personally deliver a copy to each person addressed without taking his signature.

71. A train order may, when so directed by the train dispatcher, be acknowledged without repeating, by the operator responding: "X; Number of Train Order to Train Number," with the operator's initials and office signal. The operator must then write on the order his initials and the time.

72. "Complete" must not be given to a train order for delivery to an inferior train until the order has been repeated or the "X" response sent by the operator who receives the order for the superior train.

73. When a train order has been repeated or "X" response sent, and before "complete" has been given, the order must be treated as a holding order for the train addressed, but must not be otherwise acted on until "complete" has been given.

If the line falls before an office has repeated an order or has sent the "X" response, the order at that office is of no effect and must be there treated as if it had not been sent.

74. The operator who receives and delivers a train order must preserve the lowest copy.

75. For train orders delivered by the train dispatcher the requirements as to the record and delivery are the same as at other points.

Such orders shall be first written in manifold so as to leave an impression in the record book from which transmission shall be made.

76. A train order to be delivered to a train at a point not a telegraph station, or at one at which the telegraph office is closed, must be addressed to

"C. and E. ——— (at ———), care of ———," and forwarded and delivered by the conductor or other person in whose care it is addressed. When form 31 is used "complete" will be given upon the signature of

the person by whom the order is to be delivered, who must be supplied with copies for the conductor and engineman addressed, and a copy upon which he shall take their signatures. This copy he must deliver to the first operator accessible, who must preserve it, and at once transmit the signatures of the conductor and engineman to the train dispatcher.

Orders so delivered must be acted on as if "complete" had been given in the usual way.

For orders which are sent, in the manner herein provided, to a train, the superiority of which is thereby restricted, "complete" must not be given to an inferior train until the signature of the conductor of the superior train has been sent to the ———.

218. When a train is named in a train order, all its sections are included unless particular sections are specified, and each section included must have copies addressed and delivered to it.

219. Unless otherwise directed, an operator must not repeat or give the "X" response to a train order for a train the engine of which has passed his train-order signal, until he has ascertained that the conductor and engineman have been notified that he has orders for them.

220. Train orders once in effect continue so until fulfilled, superseded or annulled. Any part of an order specifying a particular movement may be either superseded or annulled.

Orders held by or issued for a regular train become void when such train loses both right and class as provided by Rules 4 and 82, or is annulled.

221 (A). A fixed signal must be used at each train-order office, which shall indicate "stop" when there is an operator on duty, except when changed to "proceed" to allow a train to pass after getting train orders, or for which there are no orders. A train must not pass the signal while "stop" is indicated. The signal must be returned to "stop" as soon as a train has passed. It must be fastened a "proceed" only when no operator is on duty.

Operators must have the proper appliances for hand signaling ready for immediate use if the fixed signal should fail to work properly. If a signal is not displayed at a night office, trains which have not been notified must stop and ascertain the cause, and report the facts to the ——— from the next open telegraph office.

Where the semaphore is used, the arm indicates "stop" when horizontal and "proceed" when in an inclined position.

Note.—The conditions which affect trains at stations vary so much that it is recommended each road adopt such regulations supplementary to this rule as may best suit its own requirements.

221 (B). A fixed signal must be used at each train-order office which shall indicate "stop" when trains are to be stopped for train orders. When there are no orders the signal must indicate "proceed."

When an operator receives the signal "31," or "19," he must immediately display the "stop signal" and then reply "stop displayed"; and until the orders have been delivered or annulled the signal must not be restored to "proceed." While "stop" is indicated trains must not proceed without a clearance card (Form ——— (A)).

Operators must have the proper appliances for hand signaling ready for immediate use if the fixed signal should fail to work properly. If a signal is not displayed at a night office, trains which have not been notified must stop and ascertain the cause, and report the facts to the ——— from the next open telegraph office.

Where the semaphore is used, the arm indicates "stop" when horizontal and "proceed" when in an inclined position.

Note.—The Committee has recommended two forms of Rule 221, leaving it discretionary to adopt one or both of these forms according to the circumstances of the traffic.

222. Operators will promptly record and report to the ——— the time of departure of all trains and the direction of extra trains. They will record the time of arrival of trains and report it when so directed.

223. The following signs and abbreviations may be used:

Initials for signature of the ———.

Such office and other signals as are arranged by the ———.

C & E—for Conductor and Engineman.

X—Train will be held until order is made "complete."

Com—for Complete.

O S—Train Report.

No—for Number.

Eng—for Engine.

Sec—for Section.

Psgr—for Passenger.

Frt—for Freight.

Mins—for Minutes.

Jet—for Junction.

Dispr—for Train Dispatcher.

Opr—for Operator.

31 or 19—to clear the line for Train Orders, and for Operators to ask for Train Orders.

S D—for "Stop Displayed."

The usual abbreviations for the names of the months and stations.

[Here follow the forms of Train Orders.]

TECHNICAL.

Manufacturing and Business.

Bids have been asked by Commissioner of Public Works McGann for six new boilers for the Chicago Ave. pumping station. It is estimated that these boilers will cost about \$50,000, and they will replace those which have been in use since 1871 and 1888. No action has been taken toward moving this station, as was proposed last fall. (Sept. 23, 1898, p. 693.)

The National Pneumatic Tool Company, of Philadelphia, bought on April 6 from the American Pneumatic Tool Company, of New York, the exclusive

right to manufacture pneumatic chipping tools, calking and riveting hammers covered by the patents of the American Company.

We recently received from the Chicago Pneumatic Tool Co. of Chicago, a letter which reads as follows: "We have this day received orders for 158 pneumatic tools, including compressors, drills, hammers, riveters, etc. The orders for these tools are from many different concerns, including railroads, shipbuilding plants, manufacturing institutions and foundries for chipping castings, drillings, etc. Our business for March, '99, was the largest in our history, being considerably more than double that of March, '98, and the increase for this month thus far is still more marked. The tools are going to parties who are increasing the use of pneumatic appliances in their work and this increase in trade is a fair index of the general business of the country."

The New York offices of the National Electric Car Lighting Co. have been removed from 30 Broad street to 71 Broadway.

John F. O'Rourke has removed his office from 44 Broadway to 13 Park Row, New York.

We are informed that a combination has been arranged between Messrs. Georges, Hartog & Co., of Paris, the large makers in France of railroad, tramway and omnibus varnishes, and the French branch of Robt. Ingham Clark & Co., Ltd., of London and St. Denis. The company is formed under the French limited liability acts, with a capital of 3,750,000 francs in preference and ordinary shares, all of which are privately subscribed. Monsieur Hartog will be President, Mr. Robt. Ingham Clark Vice-President, and Monsieur Allard du Chollet and Mr. F. W. F. Clark Managing Directors. R. I. Clark & Co., Ltd., reserve the exclusive control and direction of the making of their Britannia brand of varnishes, which will in future be sold in France and her colonies by the French house.

Seamless cold drawn steel boiler tubes made by the Shelby Steel Tube Co., Cleveland, O., will be used in the 15 locomotives recently ordered by the Hocking Valley, and in 10 locomotives building at the Baldwin Locomotive Works for railroads in India.

Articles of incorporation have been filed in New Jersey for the Sargent Automatic Railway Signal Co. of Rochester, N. Y. The company will make and deal in semaphore signals. The incorporators are James Sargent, John D. MacMaster, P. L. Koscialowski and E. B. Fenner, all of Rochester, N. Y.

Iron and Steel.

Bids were opened April 13 for 7,100 tons of cast iron water pipe for the city of Chicago. Two bids were received, one from the United States Cast Iron Pipe Foundry Co., for \$23.48 per ton, and one from the American Pipe & Foundry Co., for \$24.43. The higher bidder has recently completed an order for the city and the lower bid is \$7.50 over the price paid last year. The new pipe is to be ready for delivery in September.

The Pennsylvania Bolt & Nut Works have posted notice of a second increase of 10% in the wages of its employees, to take effect May 1.

It is stated that the Chilian Government has invited tenders to be opened May 24th for 5,000 tons of rails.

The Maryland Steel Co. has received an order from the Chinese Eastern for 72,000 tons of rails. This is in addition to the 30,000 tons furnished by the company to that road last year.

The York Springs is ready for bids for 8½ miles of rails. Geo. A. Trimmer is Treasurer and Manager, at York Springs, Pa.

New Stations and Shops.

The Pennsylvania is building a new dock at Cleveland. It will be 675 ft. long, 200 ft. wide and will cost about \$40,000.

The round house of the Canadian Pacific at Fort William was burned April 18. It is stated that seven new locomotives were ruined, the total loss being about \$80,000.

Newspaper dispatches state that the shops now used by the Cincinnati Street Railway for repair work will be arranged for the building of cars for that road.

Pig Iron Production in March.

Figures published in the Iron Age show an increase in the production of pig iron during March. On April 1st there were 205 furnaces in blast, with a weekly capacity of 245,746 gross tons, as against 192 furnaces in blast March 1st, with a weekly capacity of 228,195 gross tons; and against 194 furnaces in blast April 1st, 1898, with a weekly capacity of 233,339 gross tons. Stocks sold and unsold on April 1st amounted to 311,963 tons against 427,081 tons March 1st.

An Auto-Truck.

An automobile truck, built by the Fischer Equipment Co., of Chicago, for the Patton Motor Co., is being used in Chicago. It is built on the system of Mr. W. H. Patton and is a combination of a gasoline engine and a dynamo. The truck is built for heavy work and is 12 ft. long and 5½ ft. wide, and weighs without load about 3½ tons. It carries easily from two to three tons. The wheels turn on ball bearings and have iron tires 4¼ in. wide, which will

be replaced by solid rubber tires. Power is supplied by a three-cylinder gasoline engine, made by the American Motor Co., direct-connected to an 8-kw., 125-volt, six pole Crocker-Wheeler dynamo, both under the forward part of the wagon. The engine and dynamo make 500 revolutions a minute and the gasoline tank has a capacity of 15 gals. The wagon is steered by a large handwheel, and brakes are operated by foot pressure.

The Vulcan Chain Pipe Wrench.

A new size of this tool, No. 16, has recently been put on the market. It is 87 in. long and takes in pipe as large as 18 in. in diameter, the chains being from 74½ to 76 in. long and tested to 40,000 lbs. Vulcan chain pipe wrenches are made in different sizes by J. H. Williams & Co., 9 to 31 Richards street, Brooklyn, N. Y., the sole owners and makers of the Brock chain pipe wrench, of which the Vulcan is the successor. A valuable feature of the Vulcan wrench is its interchangeability. New parts can be obtained and quickly fitted. The wrenches have



Vulcan Wrench with Cable Chain.

double serrated reversible jaws which are interchangeable. The jaws are drop forged and made to a saw temper; when the teeth get dull they can be sharpened with a file. If the teeth break in one of the double jaws, the wrench can be turned over and the other side of the jaws used. The pressure of the



Vulcan Wrench with Flat-Link Chain.

teeth is in a line tangent to the circumference of the pipe. The chain swings centrally between the jaws, permitting its use on either side, and either cable or flat-link chains may be used. The cable chain is useful in places where its flexibility makes it valuable and where the flat-link chain, because of its rigidity, cannot be used. One chain may be easily substituted for another in the same wrench. These wrenches are made in eight sizes and will take fittings on pipe from ½ in. to 18 in. in diameter.

Westinghouse Changes.

Mr. J. W. Cloud's going to London as Vice-President and General Manager of the Westinghouse Brake Co., Ltd., as announced in our issue of March 31, will make a number of changes among the officers of the Westinghouse Air Brake Co. in this country. Mr. R. W. Bayley of the Pittsburg office will succeed Mr. Cloud at Chicago, and Mr. R. A. Parke, Eastern Representative, will succeed Mr. Bayley. Mr. L. F. Purtil, now assistant to Mr. Parke, will take charge of the New York office.

THE SCRAP HEAP.

Notes.

The Baltimore & Ohio has issued a notice that, beginning with the payment of wages by check on May 1, no orders will be accepted upon any employee's salary.

The Southern Pacific has just made its third annual award of gold medals to roadmasters and station agents and silver medals to pumpers and track foremen.

A press despatch from Reading, Pa., says that the skilled workmen in the locomotive shops of the Philadelphia & Reading have had their wages increased between 5 and 10 per cent. The St. Louis Southwestern has increased the pay of some of the trainmen on the road in Texas.

The Delaware, Lackawanna & Western, which lately began running local suburban passenger trains to and from New York on Sundays for the first time, announces the addition of a considerable number of trains, the traffic having been larger than was expected. Between New York and Newark there will be 21 trains each way on Sunday.

The New York, New Haven & Hartford announces a new through express train each way on Sunday between New York and Boston, starting from each city at 10.03 a. m. The train will run over the Shore Line, but connection will be made at New Haven to and from Springfield. This announcement is a result of the modification of the Connecticut law which forbids running trains on Sunday.

Senator Drabell has a bill in the Missouri Legislature to regulate granting of franchises in cities of Missouri, and it has already passed the Senate. The bill provides that no franchise shall be granted except upon petition of half the property owners along the abutting frontages to a proposed electric railroad.

It is stated in the newspapers that the Union Pacific will invite 300 colleges of the United

States to send an expert geologist or paleontologist to Wyoming the coming summer to visit the fields of gigantic fossil remains which are found in that State. The invitations will offer, in the interest of science, free transportation from Chicago on the east and San Francisco on the west to Laramie and return.

Station agents of the Delaware, Lackawanna & Western tell reporters that since the new president took charge of the road they have been notified that their bonds are no longer acceptable. All of the agents had personal friends as sureties. Now they are required to have the American Surety Co. as bondsman, and they must pay \$2.25 per \$1,000 annually.

The Legislature of California has passed a law permitting any railroad to sell its property and franchises to any other railroad company, three-fourths of the stockholders of each road consenting. Provisions in the bill forbid the purchase by one railroad of another which competes with it, though a railroad now holding a lease of another may buy the leased road, whether it be competitive or otherwise. A road accepting this act must not advance freight or passenger rates, and if it temporarily cuts rates to meet competition it must not again raise them without consent of the State Railroad Commissioners. This law was passed to enable the Atchison to buy the San Francisco & San Joaquin Valley, but, as will be seen, it also will permit the purchase of the Central Pacific by the Southern Pacific. A law has also been passed requiring street cars to be fitted with fenders.

Projected Railroads in Norway.

The Board of Public Works has proposed an extension of the Norwegian railroad system, and the basis of construction is a public loan of about \$12,864,000.

A large amount of the railroad supplies will shortly be needed, to say nothing of the bridges. Manufacturers and contractors should address Mr. Victor E. Nelson, U. S. Consul, Bergen.

Acid Proof Paint.

Many readers will be interested to know that The American Lucol Company has perfected a paint which is practically acid proof. A white paint prepared by this company was recently tested along with a number of white paints from other makers, and was found to be the only one which was not destroyed by the acid fumes. The company prepares this paint in light gray, dark gray or black.

Federal Supreme Court on Michigan Mileage Ticket Law.

The United States Supreme Court, in an opinion by Justice Peckham, pronounces invalid a portion of the Michigan law regulating the sale of 1,000-mile tickets. The part of the law affected is that providing that these tickets shall be good for two years and shall be sold at a reduced rate. The Supreme Court of Michigan held the law to be a proper regulation. The test case was that brought by Henry C. Smith against the Lake Shore & Michigan Southern.

In announcing the opinion, Justice Peckham said that the provision was not the exercise of a power to fix maximum rates, and not a fair regulation of the railroads, but an improper interference. "We cannot," said Justice Peckham, "regard this exceptional legislation as the exercise of a lesser right which is included in the greater one to fix by statute maximum rates for railroad companies." The Chief Justice and Justices Gray and McKenna dissented.

Duffy vs. Chicago—Extra Work.

In the case of Joseph Duffy against the city of Chicago for \$204,000 for extra work on the new water tunnel the Supreme Court of Illinois has granted the city a re-hearing. The case has been in the courts for about one year and some time ago was decided in favor of the contractor. The city officials claimed that the extra work was never done. If the case had stood as a precedent as before decided, the tunnel which is not yet completed would cost about \$2,000,000 more than expected. The second hearing will be held as soon as possible. (June 24, 1898, p. 464.)

State Legislation in Illinois.

Among the laws enacted by the Forty-first General Assembly, which adjourned sine die on April 14, were the following, in addition to various acts previously noted: Providing that when three regular passenger trains each way each day are stopped at county seats, not more than two through express or mail passenger trains carrying mail or express and passengers from one State to another, may pass each way each day without stopping. Providing for the appointment by the Governor of a State Architect, whose duty it shall be to make all drawings and plans for all public buildings and improvements, and to supervise construction of the same. Providing for an Art Commission for Chicago, to consist of the Mayor, the President of the Art Institute, presidents of the various park boards and one painter, one sculptor and one architect, appointed by the Mayor. This act provides that no work of art shall become the property of the city until after its design and proposed location shall be approved by the Commission. The Commission will also have power to act with the Mayor on designs of public buildings, bridges, fences, lamps and fountains, as well as on sculpture, statues, and all imaginable things of the kind, which the term "work of art" is made to include. Among bills which failed of enactment were the law for an exposition building for Chicago, to be placed on the lake front; the bill for the annexation of the Calumet district to the Chicago drainage district, and a canal connecting the Calumet River with the Sanitary Canal; and those regarding telephone rates and gas charges. The appropriations for all purposes for the next two years are approximately \$11,500,000, which, while more than those of two years ago, owing to extraordinary purposes, are smaller in amount for ordinary purposes than those made by the Assembly two years ago.

Lake Navigation.

Reports from the Upper Lakes, while saying that the St. Mary's River will soon be open, indicate that the ice is still so heavy at many points that navigation will not open before May 1, when the first boats will leave Chicago for Buffalo. This is from

four to six weeks later than last year, and will make a very short season, and on account of the large traffic in ore, it will be an unusually busy one for lake boats. Hard coal to the amount of 500,000 tons is reported at Buffalo ready for shipment West, and it is said the rate from Buffalo West will be 30 cents. The first grain charters from Chicago to Buffalo were made last week, and for boats now on Lake Erie were at 2 cents on corn or wheat. Public and private elevators at Chicago on April 10 contained about 36,000,000 bushels of grain. Elevators at the head of Lake Superior about the same date contained 20,000,000.

The life-saving crews at all Lake Michigan ports went into service April 13 for the season. The Northern Steamship Co.'s line will start the season June 13 from Buffalo, and the steamer Manitou will begin its annual season from Chicago to Mackinac on June 22. The lower lakes are now entirely clear of ice, and many local lines of boats have commenced regular trips. Two of the car ferry barges of the Wisconsin & Michigan Co. will be used to carry ore from Escanaba to the South Chicago Furnace Co. It is estimated that each barge can carry 2,500 tons of ore on deck and loaded cars will be carried on the trip back. The Bessemer Steamship Co. has bought the steamer Globe from the Globe Iron Works, of Cleveland, for \$210,000. This boat will be made 72 ft. longer at the Globe yards and will be ready for service about May 15.

The combination of lake shipyards, which has been under discussion, has finally been effected under the name of the American Shipbuilding Co., with a capital stock of \$30,000,000. It includes the Chicago Shipbuilding Co., the Globe Iron Works, the Cleveland Shipbuilding Co., the Milwaukee Dry Dock Co., the Detroit Dry Dock Co. and the American Steel Barge Co.

LOCOMOTIVE BUILDING.

The St. Paul & Duluth is preparing specifications for four passenger and two switching locomotives.

The Colorado & Southern has ordered one consolidation locomotive from the Baldwin Locomotive Works.

The Baldwin Locomotive Works have received an order for one locomotive from the Illinois Terminal Ry., of Alton, Ill.

It is reported that the Canadian Pacific will build a number of passenger and freight locomotives at its Montreal shops.

The Copper Range has ordered three consolidation, one switching and two 10-wheel engines from the Baldwin Locomotive Works.

It is reported that the Lehigh Valley has ordered 25 locomotives from the Baldwin Locomotive Works; the types are not yet settled.

The Coahuila & Pacific will at once ask for bids for building eight locomotives. H. T. Lillendahl represents the company in New York City at 11 Broadway.

An exchange recently noted that the Ohio Central had ordered three locomotives from the Brooks Locomotive Works, but we are officially advised that this report is incorrect.

The Baldwin Locomotive Works has an order to build 45 locomotives for India 20 of which are narrow gauge and 25 broad gauge. Of these, five have been shipped, 10 are waiting shipment and the remainder will be delivered during the next three months.

The Michigan Central has commenced work on 10 switching locomotives which will be built at its Jackson, Mich., shops. As previously noted in this column, the Michigan Central is gradually rebuilding its passenger locomotives, putting on new cylinders, wheels and boilers, the boilers being bought from the Schenectady Locomotive Works.

The Ottawa, Arnprior & Parry Sound (Canada Atlantic) is about to order from the Baldwin Locomotive Works eight consolidation engines. They will be of the Vauclain compound type with 15½-in. and 26-in.x30-in. cylinders, 57-in. driving wheels, wagon top type boilers, with 320 tubes of National locomotive charcoal iron 2 in. in diam. and 13 ft. 6 in. long; 180 lbs. steam pressure, fireboxes of Carnegie homogeneous cast steel 120 in. long and 42 in. wide, and a tender capacity for 4,500 gals. of water and 10 tons of coal. The engines will weigh 173,000 lbs., with 156,000 lbs. on the driving wheels and be equipped with Westinghouse brakes, steel axles, Diamond S brake shoes, Gould couplers, Hancock inspirators, Crosby safety valves, Leach pneumatic sanding devices, Detroit sight feed lubricators, crucible cast steel springs, Crosby steam gages, Midvale driving wheel tires, cast iron tender and truck wheel tires, and cast steel driving wheel centers.

CAR BUILDING.

The New York, New Haven & Hartford is in the market for 300 flat and coal cars.

The Barney & Smith Car Co. is building one passenger car for the Cincinnati, Hamilton & Dayton.

The Barney & Smith Car Co. is building eight passenger cars for the Chicago, Milwaukee & St. Paul.

The Cleveland, Cincinnati, Chicago & St. Louis is building a few cars for passenger service at its own shops.

We are officially informed that the Texas Midland does not expect to buy additional rolling stock at present.

We are reliably informed that the Missouri, Kansas & Texas is preparing to order about 35 passenger coaches.

The Delaware, Lackawanna & Western has placed an order with the Barney & Smith Car Co. for 15 passenger cars for use in suburban service.

The Coahuila & Pacific will at once call for bids for building 200 freight cars. The road is represented in New York City by H. T. Lillendahl, 11 Broadway.

We understand that the Cumberland Construction Co. is about to place the order for freight cars for the Tennessee Central referred to in our issue of March 31 with the Illinois Car & Equipment Co.

We are officially informed that the Columbus, Hocking Valley & Toledo has not prepared specifications for new passenger cars, and that while such

equipment may be bought by the new company, nothing has been decided about it so far. One steel dump car has been built in the shops of the road for use in the cinder trade. We noted last week that some cars of this kind were under consideration, but are informed that no contract has been placed as yet.

The Consolidated Traction Co. (Jersey City, N. J.) has ordered 62 closed and 12 open cars from the Laclede Car Co.

BRIDGE BUILDING.

ALBANY, N. Y.—The Ferry St. bridge bill, which provides \$18,000 for a swing bridge, has been reported.

ALEXANDRIA, LA.—The Gulf, Louisiana & Great Northern will need a bridge across the Red River at Alexandria. (See Railroad Construction column.)

ASHTABULA, O.—The King Bridge Co., of Cleveland, O., has the contract for replacing the steel bridge over the Ashtabula River at this place.

ATKINSON, NEB.—The Atkinson & Northern will build a bridge 465 ft. long over the Niobara River. (See Railroad Construction column.)

BAY CITY, MICH.—Proposals will be received by the Bay County Commission until noon, April 22, for rebuilding the swing bridge over the west channel of the Saginaw River at Cass Ave. John H. Bloomfield, Engineer.

BIRMINGHAM, O.—Bids will soon be wanted by the County Commissioners at Sandusky for a bridge over the Vermillion River, which is estimated to cost \$16,000. Plans have been prepared by C. A. Judson. The bridge will be 470 ft. long. John R. Gallagher, County Auditor, Sandusky.

BLOOMINGTON, IND.—The Columbus, Bloomington & Terre Haute will need several bridges. (See Railroad Construction column.)

CAMDEN-ON-GAULEY, W. VA.—The West Virginia & Pittsburgh will soon let contracts on five bridges. (See Railroad Construction Column.)

CHATHAM, ONT.—The County Council of Kent has awarded the contract for the abutments of the Moravian bridge, which is to be built over the Thames River, to John Elliott, of St. Marys, at \$12,599. Tenders will soon be wanted for the superstructure.

CHESTER, S. C.—According to report, the Lancaster & Chester Ry. will build a four-span steel bridge of 130 ft. each span.

COLUMBUS, O.—Contracts have been awarded by the County Commissioners as follows for the various bridges reported in this column March 10: (1) Bridge over Big Walnut Creek, approaches to C. C. Swisher for \$3,230; substructure, J. A. Swingle & Co., \$9,384; superstructure, New Columbus Bridge Co., \$9,349. (2) Carruthers' bridge, Sharon Township, contract let to John Braun at \$1,477. (3) Bridge over Early Run, Harrisburg Pike, Franklin Township, contract let to Thomas Rowan at \$1,966.

DAVENPORT, IA.—The Burlington, Cedar Rapids & Northern bridge across the Black Hawk Creek was destroyed by fire April 13.

DENISON, TEX.—Plans are being considered by the City Council for a new viaduct, the center span of which is estimated to cost \$1,500.

DIXON, CAL.—The contract for building a combination bridge over Pleasant Valley Creek has been awarded to the San Francisco Bridge Co., of San Francisco, Cal.

DREHERSVILLE, PA.—The A. & P. Roberts Co., of Philadelphia, has received a contract for building one single-track iron bridge and one double-track iron bridge between Port Clinton and Dreherstown, Schuylkill County.

ELIZABETH, N. J.—The river span of the stone bridge over the Elizabeth River at West Jersey St. fell in April 12.

FAIR HAVEN, MASS.—In the State Legislature Mr. Hopewell, of Fall River, requested an investigation into the building of the bridge between New Bedford and Fair Haven. This bridge was estimated to cost only \$200,000 and has already cost \$500,000 and is not yet completed.

FORT DODGE, IA.—An ice gorge wrecked a railroad bridge last week near Fort Dodge.

FORT WORTH, TEX.—John P. Hughes, a railroad contractor of Fort Worth, has contracts for all the abutments, eight or ten in number, for the new bridges that are to span all streams on the Rio Grande Division of the Texas & Pacific.

FOSTER FERRY, O.—The Southern Bridge Co., of Birmingham, Ala., has been awarded a contract for building the drawbridge across the Warrior River.

FOUNTAIN CITY, IND.—The Grand Rapids & Indiana will build a new bridge over Nolan's fork.

GENEVA, IND.—A single span bridge of 90 ft. will be built by the Grand Rapids & Indiana over Little Limerlost. The Detroit Bridge & Iron Works has the contract.

GRAND ISLAND, N. Y.—Frank Osborne, of the Osborne Engineering Co., of Cleveland, O., has arrived at Niagara Falls with a corps of engineers to begin work on the new bridge which is to be built to Grand Island, authorized by Congress. This bridge provides for two tracks for steam railroads, two for trolley railroads, two driveways and two footpaths, and also cycle paths.

GULF PORT, MISS.—The Gulf & Ship Island RR. will require some bridges on its extension from Lumberton to Columbia. (See Railroad Construction column.)

JERSEY CITY, N. J.—Wolfanz G. Triest has the contract for the steel bridge to be built over the Lehigh Valley RR. tracks on Pacific Ave.

KANSAS CITY, MO.—The bill before the State Legislature to authorize the Union Depot Co. of Kansas City to build and operate the Winner bridge, was passed by the House April 7.

MACON, GA.—The Brockett Bridge Co., of Cincinnati, O., is said to have secured a contract for

building the iron bridge over the Ocmulgee River at \$37,000. (April 14, p. 269.)

MEMPHIS, TENN.—At the session of the County Court April 11, bridge petitions were presented as follows: For a bridge over Brook's Creek, in the Ninth Civil District; over Mary's Creek, granted and bridge ordered built; to repair bridge on Memphis and Randolph road, petition granted and work ordered begun at once. A contract for building a bridge on the Cow Island road, in the Thirteenth Civil District, was awarded to M. L. Thompson. Stone N. Wilson was awarded the contract for the bridge over Nonconah Creek, on the Colliersville and Old Park road, Tenth Civil District. A petition for bridges on Union and Bass Aves., in the city of Memphis, was presented to the County Commissioners and rejected as being city work. The Tennessee Midland RR., which is now operated by the Nashville, Chattanooga & St. Louis, will probably rebuild the bridge over Rember Ave. W. W. Barksdale, Superintendent of Bridges.

MERIDEN, MISS.—V. White, County Clerk, will receive proposals for the Supervisors of Lauderdale County until May 1 for a wooden bridge across Suck-atalba Creek.

MOUNTAIN CITY, TENN.—The County Court of Johnson County has made appropriations for two bridges across Little Doe, one across a ford just below and another just above Doeville.

NEW CASTLE, PA.—Patton & Gibson, Pittsburgh, have the contract for the superstructure on the new bridge for the Pittsburgh & Lake Erie over the Shenango River.

NEW WHATCOM, WASH.—Alex Van Wyck, Clerk of Board of County Commissioners, will receive bids until May 3 for a trestle bridge 160 ft. long with 12 ft. roadway.

NORTH CAMBRIDGE, MASS.—The Middlesex County Commissioners have decided to build a bridge at Porter's Station, at North Cambridge.

OMAHA, NEB.—Surveyor McBride, of Douglas County, is preparing a detailed report on the condition of all county bridges and culverts to be ready for consideration in time to secure action for repairs when necessary. There are nearly 300 bridges and culverts in the county.

OTTAWA, ONT.—A contract aggregating nearly \$200,000 is said to have been given to the Dominion Bridge Co., of Montreal, for the iron and steel work on the Interprovincial Bridge between Ottawa and Hull across the Ottawa River.

PEKIN, ILL.—The Schultz Bridge Iron Co., of McKee's Rocks, Pa., has the contract for the large steel bridge across the Illinois River for the Peoria & Pekin Ry. There will be four spans of 150 ft. each and a draw of 385 ft. The price is \$125,000.

PITTSBURGH, PA.—Edward M. Bigelow, Director of the Department of Public Works, will receive bids until 2 p. m. April 21 for rebuilding the Main St. bridge across the Saw Mill Run. Bids are also wanted on other bridge work.

PHILADELPHIA, PA.—The City Council has approved the contract with the Phoenix Bridge Co. for the steel superstructure of the Gray's Ferry bridge, which will cost \$147,500. (April 14, p. 269.)

PLAINWELL, MICH.—The Grand Rapids & Indiana RR. bridge, which is to be built over the Kalamazoo River at this place, will cost \$20,000. The new bridge will be built by the Detroit Bridge & Iron Works, and the masonry by Herman W. Taft, of Fort Wayne, Ind. The new structure will be of two spans, each 100 ft. long.

READING, PA.—The County Commissioners filed a report relative to the bridge over Swamp Creek at Guldin's woods in Colebrookdale Township, requesting that the bridge be built and maintained as a county bridge. Estimated cost, \$1,500.

SCHENECTADY, N. Y.—The New York Central & Hudson River RR. has awarded to the Elmira Bridge Co. the contract for the double track bridge over the Mohawk River at Hoffmans, which is to connect with its new freight yard. (April 14, p. 269.) A foot bridge will be built over the tracks of the N. Y. C. & H. R. at State St., and it will probably be extended so as to cross the tracks of the Delaware & Hudson RR.

SENECA FALLS, N. Y.—The bill appropriating \$8,000 for a bridge over the canal at Rumsey St., has been signed by the Governor.

SOUTH BEND, IND.—The County Commissioners are considering a petition for a new bridge across the St. Joseph River at Sample and Jefferson Sts. This petition has been before the Board for about a year. The Board has refused the petition of property owners for a bridge across the river on Washington St.

STOCKTON, CAL.—A bridge across the Stockton channel is being talked of.

SYRACUSE, N. Y.—The plans for the Syracuse, Lakeside & Baldwinsville Ry. Company's bridge over the D. L. & W. tracks at Stiles have been approved. The span over the steam railroad tracks will be 118 ft. long, and the entire structure 318 ft.

TORONTO, ONT.—Plans are reported being prepared by James McDougall, County Engineer, for the proposed steel bridge over the Humber River at Rountree's Mill on the Baughan Road, York County. Bids are wanted shortly for erecting the Eastern Ave. bridge, for which plans have been prepared by City Engineer C. H. Rust. (Feb. 10, p. 106.)

WATERFORD, N. Y.—The Horseheads Bridge Co., of Horseheads, N. Y., has a contract for a steel bridge at Waterford.

WATERTOWN, N. Y.—A new bridge will be built over the Black River at Pearl St. estimated by the Board of Public Works to cost \$5,000.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Cincinnati, Hamilton & Dayton.—New preferred, 1½ per cent., payable May 8.

Great Northern.—Preferred, quarterly, 1½ per cent., payable May 1.

Northern Pacific.—Preferred, quarterly, 1 per cent., payable June 5.

St. Paul, Minneapolis & Manitoba.—Preferred, quarterly, 1½ per cent., payable May 1.

Brooklyn City RR.—Quarterly, 2½ per cent. Columbus (O.) St. Ry.—Quarterly, 1 per cent., payable May 1.

New Orleans & Carrollton.—Quarterly, 1½ per cent., April 20.

St. Louis Railway Club.

At the regular meeting of the St. Louis Railway Club, Mr. John J. Baulch was elected President. Mr. Baulch is now General Freight Agent of the Wiggins Ferry Company.

Railway Signaling Club.

This Club will meet at Chicago on April 25, as announced in the Railroad Gazette last week. The two papers to be presented at the meeting, which are by Mr. Keppel and Mr. Elliott, are given on another page of this paper.

American Society of Civil Engineers.

At the meeting of Wednesday, April 19, Mr. T. H. McCann described a Special Case of Laying and Testing 18-in. Cast Iron Submerged Water Mains. Mr. H. deB. Parsons described a Novel Steam Heating System. Discussions were held on these special topics.

Western Society of Engineers.

Mr. W. J. Karmer, Assistant to the Chief Engineer of the Illinois Central, on Wednesday evening, April 19, gave an illustrated lecture in the Society rooms, Monadnock Block, Chicago, entitled "Among the Castles and Abbeys of Great Britain." This was a popular lecture, and a number of ladies were present.

New England Roadmasters' Association.

At a special meeting of the Association held at Springfield, Mass., on March 22, the name of this association was changed to the Eastern Maintenance of Way Association, and the territory of the association was enlarged so as to include the whole of the United States east of the Mississippi River. The next meeting will be held in Portland, Me., Aug. 16. The Secretary of the association is F. C. Stowell, Ware, Mass.

Railway Transportation Association.

This is the name of an organization which was started in Chicago, April 11, by J. M. Daly (I. C.), C. B. Adams (Wabash), G. P. Conard and other car-service men. The men named are respectively President, Vice-President and Secretary. A meeting will be held in June or July and thereafter semi-annually. A committee has been appointed to select subjects, the scope of which is described as "general transportation, car service and movement of trains on tonnage basis."

New York Railroad Club.

A regular meeting of the New York Railroad Club was held Thursday evening, April 20, in the rooms of the Transportation Club, New York. The Executive Committee submitted to the members the question whether or not it would be desirable to change the regular meeting place from the rooms of the American Society of Mechanical Engineers to those of the Transportation Club. The regular attendance at the meetings has become so large that more roomy quarters seem necessary. No formal paper was presented.

American Society of Civil Engineers.

About 25 were in attendance at the first meeting of the Juniors of the American Society of Civil Engineers, at the Society house on the evening of April 12. The Secretary of the Society, Mr. C. W. Hunt, presided. The evening was spent in an informal discussion of the duties and responsibilities of an inspector and many and instructive were the experiences told by those who spoke. As the stenographic report of the meeting will be sent to the members, a report here seems unnecessary. Mr. Francis Collingwood was present and added to the interest by recounting some personal experiences as an inspector.

Those present recommended to the Board of Direction that other meetings be held on the second Wednesdays in May and June and it is probable that the Board of Direction will act favorably on this recommendation.

Civil Engineers' Club of Cleveland.

The April meeting was held at Case School of Applied Science on April 11, 1890. The laboratories were open at 7 o'clock and were visited by many members and friends. The new 100-ton testing machine and the steam turbine received special attention.

The meeting was called to order at 8.15 p. m. in the Electricity Building by Vice-President John W. Langley. Present, 33 members and 15 visitors.

A letter from Mr. Ambrose Swasey was read containing the announcement that he had presented the Club with a new Projection Lantern. Dr. Chas. S. Howe moved a vote of thanks to Mr. Swasey.

Dr. Chas. S. Howe, of the House Committee, reported that rooms had been rented in the Arcade for the joint use of the Technical Clubs, that they were now being decorated and furnished and would be ready for occupancy about May 1.

Prof. Chas. H. Benjamin read the paper of the evening entitled, "Power consumed by Shafting and Belts." The paper was well illustrated with slides and the Flather dynamometer.

The paper was discussed by Messrs. Palmer, Benjamin, Cowles, Langley and Reed.

Engineers' Club of St. Louis.

The 488th meeting was called to order April 5, at 8.15 p. m., by President Colby. Mr. W. A. Layman read the paper of the evening, entitled "Alternating Current Power Motors." The various uses to which motors may be put were mentioned. Ten years ago alternating current motors were regarded as mere laboratory playthings, whereas to-day they are of commercial importance. The use of the great Niagara Falls power plant for supplying current for power purposes is an illustration of the growth of the use of this type of motors.

The difference between the direct and alternating currents, and the methods of generating currents of several phases, were described and illustrated by means of diagrams. The development of the induction motor by Tesla and the results of his investigations pointed out. While there have been many types of two and three-phase motors brought out, there has not been until lately, a successful single-phase motor. A motor of this type is highly desirable because of its applicability to the common light-

ing circuit, and because it necessitates no change in the power-house equipment. The essential differences between the single and multiphase motors, and the details of a successful single-phase motor as built in St. Louis were fully described. Some interesting results of tests on a 5-H. P. motor were illustrated graphically by diagrams.

The discussion following was participated in by Messrs. Flad, Bryan, Humphrey, Colby, Nipher, Pillsbury and Borden.

After a few remarks by the President concerning the next meeting, and the announcement of the paper for that evening, "The Engineers' Club, of St. Louis, Its History and Works," by Mr. W. H. Bryan, the meeting adjourned.

PERSONAL

(For other personal mention see Elections and Appointments.)

—Mr. C. B. Graves of Emporia, who was appointed by the Governor Presiding Judge of the Court of Visitation of Kansas, has declined to accept the position, and Mr. W. E. Johnson of Garnett has been appointed in his stead.

—The Directors of the Chicago City Railway at a meeting on April 13 elected Mr. David G. Hamilton President of the road to succeed the late Menard K. Bowen. Mr. Arthur Orr was elected a Director to fill the vacancy caused by Mr. Bowen's death. Mr. Hamilton has been for some time Vice-President of the Chicago City Railway and his election to the Presidency was expected. He was born in Chicago in 1842, was educated in that city and studied law at the old Chicago University. He is a Director of the Chicago Title & Trust Co., a member of the Board of Trustees of the University of Chicago and of Depauw University; a member of the Union League, Chicago and Washington Park clubs, of Chicago, and of the Mercantile and St. Louis clubs, of St. Louis. Mr. Hamilton has been prominently connected with street railroads for a number of years. Ten years ago he was made President of the National Railway, a corporation operating seven surface lines in St. Louis, which position he held until Jan. 25 last. It is understood that Mr. Hamilton prefers to give his time to his large personal interests and that he will remain at the head of the City Railway only until the Directors can find a permanent successor to Mr. Bowen. It is recognized that the place will be a hard one to fill and Mr. Hamilton may therefore hold it for some time.

—Mr. W. J. Wilgus, who succeeds Mr. Katté as Chief Engineer of the New York Central & Hudson River Railroad, is a young man to have reached a position so important. He was born in Buffalo, N. Y., Nov. 20, 1865. He graduated at the Buffalo High School and took two years' special study in civil engineering. He began his railroad work in August, 1885 with the Minnesota & Northwestern, now the Chicago Great Western Railway. He remained with that company until 1890, going through various grades from rodman to Division Engineer, in charge of the Leavenworth & St. Joseph extension and the Kansas City terminals. In 1891 he served as Resident Engineer of the Chicago Union Transfer Railway in charge of construction, and in 1892 as Locating Engineer for the Duluth & Iron Range Railroad. From 1893 until now he has been with the New York Central & Hudson River Railroad, having begun as Assistant Engineer of Maintenance of Way on the Rome, Watertown & Ogdensburg. He has held the positions of Chief Engineer of the Terminal Railway of Buffalo, Resident Engineer Eastern Division, Chief Assistant Engineer all lines, and Engineer of Maintenance of Way. He is now Chief Engineer in charge of construction and maintenance of way on operated and leased lines. Mr. Wilgus is a member of the American Society of Civil Engineers and the St. Paul Society of Civil Engineers.

—Mr. Walter Katté has resigned as Chief Engineer of the New York Central & Hudson River Railroad and is succeeded by Mr. W. J. Wilgus. In his letter of resignation, Mr. Katté said that his duties had been so multiplied by recent administrative changes that it seemed necessary that a younger man should take up the work. Mr. Depew has said that Mr. Katté will remain as Consulting Engineer of the New York Central as long as he lives.

Walter Katté was born in London, Nov. 13, 1830, and entered the profession of the civil engineer in the usual English way—that is, as a pupil in an engineer's office. He began his railroad service in 1850 and has an unbroken record of work of almost 50 years. He has been connected in various capacities, always in the engineer corps, with the Central of New Jersey, the Pennsylvania Railroad, the Pennsylvania Lines west of Pittsburgh, the West Shore, the New York, Ontario & Western and other roads. From 1865 to 1875 he was Engineer, Secretary and General Western Agent of the Keystone Bridge Co., his last work with this company having been as superintending engineer of erection of the Eads Bridge at St. Louis. For three years, ending in 1880, he was Chief Engineer of the New York Elevated Railroad; then from 1880 to 1886 he was Chief Engineer of the New York, West Shore & Buffalo during its construction, also of the Ontario & Western and of the West Shore & Ontario Terminal. He served also as Vice-President and Chief Engineer of the North River Construction Co. In 1886 he became Chief Engineer of the New York Central & Hudson River, with all of its controlled lines, and that is the office which he now resigns. He was also one of the Commissioners and Superintending Engineer of the Board for the Improvement of Park Ave., New York City.

Mr. Katté has won an honorable place in the profession. As will be seen from this brief sketch his career has covered a great variety of work, much of it of importance and difficulty. The last monumental work of which he has had charge is the elevated structure and the four-track drawbridge north of the Grand Central station and across the Harlem. Mr. Katté is a member of the American Society of Civil Engineers, the Western Society of Civil Engineers, the Institution of Civil Engineers and other scientific bodies.

ELECTIONS AND APPOINTMENTS.

Arizona & Utah.—The officers of this company, successor to the Sacramento Valley, referred to in the Construction column, are: President, F. L. Underwood, 31 Nassau St., New York; Vice-President

and General Manager, S. B. McConico, Kingman, Ariz.; Secretary and Treasurer, Chas. E. Morris, 31 Nassau St., New York; Chief Engineer, H. M. McCartney, Kingman.

Atkinson & Northern.—The officers of this company referred to in the Construction column, are: President, Samuel C. Sample, Butte, Neb.; Vice-President, M. P. Mehlin, Norden, Neb.; Secretary, T. S. Armstrong, Butte; Treasurer, Brantly E. Sturdevant, Atkinson, Neb.; General Attorney, W. E. Scott; Chief Engineer, Don J. Barnes, Chicago, Ill.; General Manager, A. O. Perry, Atkinson; General Superintendent, Wm. J. Dobbs, Atkinson. New York representatives, the Colonial Trust Co.

Atlanta, Knoxville & Northern.—John B. Newton has been appointed Chief Engineer in charge Maintenance of Way, Structure and Betterments, with headquarters at Marietta, Ga.

Chesapeake & Ohio.—F. W. Scarborough has been appointed Engineer of Bridges and Signals, with headquarters at Richmond, Va. E. M. Hoadley has been appointed Assistant Engineer Maintenance of Way of the Huntington Division, with headquarters at Hinton, W. Va., succeeding Mr. Scarborough. The jurisdiction of E. T. Morris, Assistant Engineer of the Lexington and Big Sandy Divisions has been extended over the Cincinnati Division, with headquarters at Ashland, Ky. J. M. Hughes has been appointed Supervisor of the Big Sandy Division, with headquarters at Ashland, Ky.

Chicago, Rock Island & Pacific.—The headquarters of W. K. McFarlin, Superintendent of Maintenance and Construction, have been removed from Davenport, Ia., to Chicago, Ill.

Cincinnati, Hamilton & Dayton.—I. F. White, Superintendent of Track and Structures, with headquarters at Hamilton, O., has resigned.

Coahuila & Pacific.—The officers of this company, referred to in the Construction column, are: President and General Manager, A. W. Lillendahl; Vice-President, F. A. Lillendahl; Treasurer, Dr. W. M. Lillendahl; Chief Engineer, T. S. Abbott. The central office is Saltillo, Mexico.

Ft. Worth & Denver City.—C. M. Hunt has been appointed Assistant Superintendent, with headquarters at Wichita Falls, Tex.

Great Northern.—Wm. N. Neff has been appointed Assistant Superintendent of the Breckenridge Division, with headquarters at Breckenridge, Minn.

Gulf, Beaumont & Kansas City.—At a meeting of the stockholders held on April 7, William F. Wharton, of Boston, Mass., was elected a Director.

Kansas City & Northern Connecting.—At the meeting of the stockholders, A. F. Nathan was elected a Director.

Mobile & Birmingham.—At the annual meeting of the stockholders held at Mobile, Ala., April 5, J. Pollock was elected a Director.

New York Central & Hudson River.—W. J. Wilgus has been appointed Chief Engineer, in charge of Construction and Maintenance of Way, succeeding Walter Katté, resigned. The office of Engineer of Maintenance of Way has been abolished.

Norfolk & Western.—C. A. Seley has been appointed Mechanical Engineer, succeeding G. R. Henderson.

Pennsylvania Co.—W. C. Lorce advises us that he has not resigned as Engineer Maintenance of Way of the Indianapolis Division of this company, but that he has been temporarily transferred as Acting Superintendent. A. H. Buchanan, heretofore Assistant Trainmaster, has been appointed Trainmaster of the Erie & Ashtabula Division, with headquarters at Lawrence Junction, Pa., succeeding John B. McKim, transferred. Charles D. Law, heretofore Superintendent of the Western Division, has been appointed Real Estate Agent west of Pittsburgh, with headquarters at Pittsburgh, Pa.

St. Louis, Indianapolis & Eastern.—J. F. Titus has been elected Treasurer, succeeding J. L. Stockton, deceased. The headquarters of C. R. Hinkle, Auditor, have been removed from Sullivan, Ind., to Chicago, Ill.

Southern Indiana.—James Walsh has been elected Vice-President, succeeding F. B. Ogden, resigned. Effective April 17.

Staten Island.—George E. Randolph has been elected President, succeeding J. Frank Emmons, resigned.

Texarkana & Ft. Smith.—O. H. Crittenden has been appointed Chief Engineer, with headquarters at Texarkana, Tex., succeeding F. T. Robertson, resigned.

United Counties.—Henry Upton, with headquarters at Montreal, Que., has assumed the duties of Traffic Manager in addition to those of Auditor.

Washburn, Bayfield & Iron River.—C. F. M. Tilling, heretofore General Freight and Passenger Agent, has been appointed General Superintendent, with headquarters at Washburn, Wis., succeeding Harry Park, resigned.

White Pass & Yukon.—The officers of this company are: President, S. H. Graves; Secretary, F. C. Elliott; Treasurer, Jno. W. Probert of Chicago, Ill.; Auditor, A. L. Berdoo, and general Traffic Manager, L. H. Gray, of Seattle, Wash.

Wichita & Denison.—The Directors of this new company, referred to in the Construction column, are: J. J. Shaffer, Stillwater; B. R. Fowler, Tyson; B. F. Diamond, Chandler; H. B. Dexter, Shawnee; W. A. Knipe, Perkins. The following compose the officers: W. A. Knipe, President; F. S. Diamond, Vice-President; R. A. Lowry, Secretary; H. B. Dexter, Treasurer.

Wyoming & Black Hills.—The officers of this company, referred to in the Construction column, are: President, Samuel W. Snow; Treasurer, Benjamin L. Heath; Secretary, Edmund H. Noyes. The general office of the company is 27 State St., Boston.

York Southern.—The officers of this company are as follows: President, Chas. H. Jones, Jr., Baltimore, Md.; Vice-President, H. C. Niles, York, Pa.; Secretary, M. H. Houseman, Baltimore, Md. The Directors are: R. B. Sperry, Geo. K. McGaw, Baltimore, Md.; Geo. E. Neff, James H. Schall and Geo. R. Rogers, York, Pa.

York Springs.—The officers of this company, referred to in the Construction column, are: President, G. H. Trortle; Secretary, Walter Welbert; Treasurer and General Manager, Geo. A. Trimmer, all of York Springs, Pa. Chief Engineer, Chauncey Ives of Chambersburg, Pa.

RAILROAD CONSTRUCTION, New Incorporations, Surveys, Etc.

ACME TAP.—Surveys are completed and building will be begun soon by the company's own forces on this line 1½ miles long, connecting Fort Worth and Denver City, at Acme, Tex., with mines and plaster mill. (Jan. 20, p. 52.) Fred. H. Quincy, of Salina, Kan., is President. (Official.)

ALGONA CENTRAL.—H. C. Hamilton, solicitor of Sault Ste. Marie, Ont., has given notice in behalf of his company of application for a charter to the Canadian Parliament at its present session, to build from Sault Ste. Marie north along Lake Superior to a point on the main line of the C. P. R., between Dalton Station and White River Station, and thence north to a point on Hudson Bay at the mouth of the Albany River, with a branch from the crossing point of the C. P. R., southwest to Nichipicoten Harbor upon Lake Superior. (Feb. 3, p. 92.)

ARIZONA & UTAH.—This company, successor to the Sacramento Valley (Dec. 2, 1898, p. 868), is building a line from McConico Junction, Ariz., on the Santa Fe Pacific, northwest 24 miles via Chloride to White Hills. The line will include four miles of trackage over the Santa Fe Pacific from Kingman to McConico. The entire line is under contract to Kenefick & Lusk, of New York and Chicago, who have a local office at Kingman. Building was to be begun April 13, with about 50 teams and two graders. The first section of 22 miles to Chloride will be complete July 15 and the rest of the line four or five months later. The officers are given under Elections and Appointments. (Official.)

ARKANSAS & NORTHWESTERN.—Bids will be received up to April 22 for grading 25 miles from Stamps, Ark., northwest to Hope, Ark. W. Y. Forster of Hope, Ark., is President. (March 24, p. 217.)

ATKINSON & NORTHERN.—Surveys have been completed and grading was begun April 10 from Atkinson, Neb., on the Fremont, Elkhorn & Missouri Valley line of the Chicago & Northwestern, to run north via Thorn and Angora to Perry on the north side of Niobrara River. The contract was made March 1 to J. H. Shepard, of Chicago. A large force is grading all along the line. The maximum grade is 1% and the maximum curve 2°. There will be three short trestles and one bridge of 465 ft. over the Niobrara River. The officers are given under Elections and Appointments. (Official.)

ATLANTA, KNOXVILLE & NORTHERN.—Press reports state that this company will extend its line south to Atlanta. The line now runs as far as Marietta, Ga., 20 miles north of Atlanta. Trains run in on the Nashville, Chattanooga & St. Louis.

ATLANTIC & DANVILLE.—About 150 men are at work on the extension from Virginia to the Pierson County copper mines in North Carolina, about 15 miles. It is expected that the branch will be completed within a few weeks. (Jan. 20, p. 52.)

ATLANTIC, VALDOSTA & WESTERN.—Rails are laid, according to report, to the Six-mile branch west of Jacksonville, and construction trains are running to that point. Grading has been practically completed to the north line of the city and partially completed within the city line. A number of buildings on the right of way within the limits are being torn down and the grading of that portion will soon follow. (March 3, p. 160.)

BALTIMORE & OHIO.—The General Manager writes that there is no truth whatever in the report that the company is to build a branch from Scholls Run, Pa., to South Huntington Township. (April 7, p. 252.)

BALTIMORE & OHIO SOUTHWESTERN.—Mason & Hogue, of Louisville, Ky., have been awarded the contract, according to report, for building a tunnel and straightening curves near Willeby Valley. Gannon & Co., of Cairo, Ill., have the contract for changing the line from North Vernon to Haydon, and a Cincinnati firm is stated to have the contract for double tracking 16 miles from Morris Hill to Millan. Receivers were granted permission to expend \$614,800 on improvements recently. (Feb. 24, p. 145.)

BANGOR & AROOSTOOK.—Surveys are about to begin according to report for the proposed extension about 30 miles to Van Buren, Me.

BOSTON & MAINE.—This company, according to report, has planned to build an additional track from Springfield, Vt., to Claremont Junction, making double track for the entire distance from Belows Falls to the Junction.

CANADIAN PACIFIC.—The directors have authorized the expenditure of \$300,000 for building branch lines to mines on the Crows Nest Pass line.

CENTRAL OF GEORGIA.—Hardaway, Jones & Co., are reported to have the contract for the proposed extension from Searight, Ala., southwest via Christine to Andalusia, 14 miles, and building is to be begun at once. (April 7, p. 252.)

CENTRAL OF NEW JERSEY.—Grading is reported begun with 200 men at Lawrenceville, N. J., for an extension from Bound Brook southwest about 30 miles in nearly a direct line through North Princeton and Lawrenceville to Trenton.

CHATTANOOGA & LOOKOUT MOUNTAIN.—Arrangements are completed for the Tennessee & Round Mountain extension south about 10 miles to Durham, Ga. Grading was to be begun about April 15. (Feb. 24, p. 146.)

CHATTAHOOCHIE VALLEY.—Contracts are being made, according to report, for the proposed line from Riverview, Ga., southwest to Columbus, and it is proposed that grading be begun in a few weeks. This line is not being built directly by the Chattahoochee Valley, but surveys were made by Atkinson & Turner. (Oct. 7, p. 732.)

CHESAPEAKE & OHIO.—West Virginia press reports state this company will build an extension from Prince southwest, 12 miles, across New River

to Beckley, County seat of Raleigh. It will require a bridge across New River.

This company, according to report, will make a number of improvements at Newport News, Va., including an extension of 3,000 ft. in the railroad yard and four miles of track.

CHICAGO & EASTERN ILLINOIS.—Creech & Lee of Kansas City, Mo., are reported to have the contract for grading, bridging and masonry on the proposed extension of the St. Elmo Division from Marion, Ill., southwest 61 miles to Cape Girardeau on the Mississippi River. Work is to be begun at once. (March 17, p. 197.)

CHICAGO & NORTHWESTERN.—Surveys are reported completed for the proposed extension from Stephenson, Mich., north of Menominee, to run west about 12 miles to White Rapids on the Menominee River. It is stated that building is to be begun as soon as frost is out of the ground. (April 14, p. 271.)

Right of way has been secured for the extension from Sanborn, Minn., northwest 26.4 miles to Vesta Township. This line was surveyed some time ago. Winston Bros., of Minneapolis, who have the contract for the extension from Burt, Ia., northwest 92.5 miles to Sanborn, are reported to have the contract for this further extension. (March 31, p. 235.)

CHICAGO, BURLINGTON & QUINCY.—This company has been pushing its work through Jefferson County, Ia. It is stated that there will be a filling of 47 ft. at Little Crow Creek, with a new bridge over the Creek.

Most of the right of way has been bought and grading has already begun on the extension of the Burlington & Missouri River from Alliance, Neb., south about 160 miles to Brush, near Denver. (April 14, p. 271.) This is being built under the Nebraska, Wyoming & Western. (See below.)

CHICAGO GREAT WESTERN.—Press reports state that the company is about to relay 150 miles of track with 90 lb. rails. Most of this will be on the Chicago Division, with a few miles on the St. Paul Division.

CHICAGO, ROCK ISLAND & PACIFIC.—The company is making surveys for a line from Winter-set, Ia., northwest via Macksburg to Creston. Should this route not prove feasible, survey will be made from Indianola via Macksburg to Creston. There is a possibility that the line may run from Macksburg to Atlantic over practically the route selected by the Chicago Great Western in its survey from Peru to Council Bluffs.

CLARION RIVER.—(See Railroad News column.)

CLEAR FORK & POCAHONTAS COAL.—This company was incorporated in West Virginia April 14, to build a railroad from the Norfolk & Western at Gordon Station, at the mouth of Clear Fork Creek, to run to Hoopers Creek, with a branch up Jacobs Fork and down Dry Fork to the Virginia line and another branch down Dry Fork to Peeryville, in McDowell County. Charles E. Ritchie, of Akron, O., is among the incorporators.

COAHUILA & PACIFIC.—The concession recently noted in this column to A. W. Lillendahl, of Saltillo, Mex., is to be built under this title. It is to be a standard gage road from Saltillo west about 150 miles through the State of Coahuila to Torreón. (Mexican Roads, March 24, p. 217.) Contracts will be let for grading and track laying, bridges, etc., about June 1, and work is to be begun immediately. The work is very easy, the maximum grades being 2% and the maximum curves 8°. The bridges will be built all of wood and later rebuilt of steel. H. T. Lillendahl, of 11 Broadway, New York, and 78 Danforth avenue, Jersey City, is the New York representative. The officers are given under Elections and Appointments. (Official.)

COLUMBUS, BLOOMINGTON & TERRE HAUTE.—Preliminary surveys are completed for this line from Columbus, Ind., west via Nashville to Bloomington. One tunnel about 600 ft. long may be needed and bridges as follows: One at Columbus over the White River, 415 ft.; six bridges averaging 100 ft. each over Salt Creek; another bridge over White River, 360 ft., and one over Eel River, 200 ft. Bids will be asked for grading as soon as the subsidy tax is voted on, right of way secured and locating survey made. (March 24, p. 217.) P. B. Willoughby, of Bloomington, is President; Chas. W. Shaw, Bloomington, General Superintendent, and Wm. H. Rights, of Columbus, Ind., Chief Engineer. (Official.)

DENVER & NORTHWESTERN TERMINAL.—This company was incorporated in Colorado April 15 with a capital stock of \$5,000,000, to build a line from Denver northwest about 300 miles, through the counties of Arapahoe, Boulder, Grand, Routt to Piedmont, Wyo., on the Union Pacific. It is stated that the Missouri Pacific is back of the project and that preliminary surveys were made about two years ago.

DULUTH & NEW ORLEANS.—Surveys are begun on the proposed route of this line through Iowa. A camp has been established between Des Moines and Elkport and surveyors are working toward Nevada. This work will be rushed as fast as possible, and as soon as the route is ascertained, building will be begun. S. V. Wardell of Ames, Ia., Vice-President, states that it is the intention to build from Des Moines to a point on the Chicago, Milwaukee & St. Paul at or near Iowa Falls, about 100 miles, this year. The road is projected to run from Duluth, Minn., south to New Orleans, La. (March 24, p. 217.)

ELIZABETH MINERAL.—J. N. Adams of Stony Creek, Tenn., President and Chief Engineer, is reported as stating that arrangements are completed for building seven miles more of this line, which is projected to run from Elizabethtown, Tenn., to Stony Creek, 12 miles, and from Stony Creek to Damascus, Va. Two miles of the line were completed last year. The company was incorporated a year ago. (April 22, 1898, p. 300.)

ERIE.—This company is building third and fourth tracks on the road between Ramseys, N. J., and Suffern, N. Y., about four miles. It will also reduce the heavy grades of 53 ft. per mile to Wabwah, N. Y., to something less than 30 ft. per mile. (Official.)

FAIRCHILD & NORTHEASTERN.—The company has completed its line from Greenwood to Shilling, four miles. Rails are bought for the extension from Shilling to Colby, 13 miles, which it is proposed to build. (Dec. 16, 1898, p. 903.) M. C. Foster, of Fairchild, Wis., is President. (Official.)

FARMVILLE & POWHATAN.—This company's line, which runs from Bermuda Hundred on the

James River, to Farmville, Va., 93 miles, is to have a branch from a point near Chester north 13 miles to Manchester. The maximum grades are 1% and the maximum curves 2". (Dec. 2, 1898, p. 867.)

The company also proposes to extend its line west about 123 miles through the counties of Prince Edward, Charlotte, Halifax, Pittsylvania and Franklin to Roanoke. The counties will probably be asked to vote the subscription at the June court. Jas. R. Werth, of Richmond, Va., is General Manager. (Official.)

GREAT NORTHERN.—The President writes that there is no truth in the report that the company contemplates building a line between Vancouver, B. C., and New Westminster. (April 7, p. 253.)

GULF & SHIP ISLAND.—Grading will be begun immediately on an extension from Lumberton, Miss., northwest about 30 miles to Columbia, and the company expects to complete it within a year. Bonds will be issued at the rate of \$10,000 per mile and stock also in like amount. There will be two steel plate girder spans probably not exceeding 60 ft. in length. (April 7, p. 253.) The company does not expect to contract the grading or track laying, but to do it with its own forces. (Official.)

GULF, LOUISIANA & GREAT NORTHERN.—This company has made a mortgage for \$4,000,000 to the Continental Title & Trust Co., of Philadelphia, for its proposed line from Vermillion Bay, La., north 270 miles via Arcadia and Colfax, La., to the Arkansas state line, and thence perhaps to Fort Smith, a total of 460 miles. It is stated that the company has bought the survey made by the Kansas City, Watkins & Gulf Co. of a line on the north side of Red River to be used into Colfax. Work is to be begun at Pineville. A bridge will be required across the Red River at Alexandria. Joseph J. Waltz, of Alexandria, La., is President. (March 17, p. 197.)

GURLEY & PAINT ROCK VALLEY.—Efforts are being made to revive this project. The company was chartered in Alabama in 1889, with a capital stock of \$100,000, to build a line from Port Deposit, on the Tennessee River, to run north 60 miles via New Hope, up Flint River Valley to Gurley, thence up the Paint Rock Valley to Winchester, Tenn. Survey was begun in March, 1892, and contract let the following April for the first 30 miles, to Allen Mosely & Co., Rocky Mt., Va. About five miles of track was laid and the work then abandoned. At that time Frank Gurley, of Gurley, was President and Samuel I. Wheatcroft, of Birmingham, Ala., Chief Engineer. Major E. C. Gordon, a railroad promoter of Alabama, is said to be interested in reviving the project. (Oct. 18, 1889, p. 689; April 22, 1892, p. 304; July 1, 1898, p. 503.)

HOLSTON VALLEY.—The General Manager writes that the company does not intend to extend its line into Shady Valley east 15 miles. There are rumors, he says, that private parties are building a line as an outlet from Shady Valley, but he knows nothing definite. (April 7, p. 253.)

ILLINOIS CENTRAL.—Men are at work at several points along the line in Iowa improving the roadbed preparatory for the fast train service to be established between Omaha and Chicago as soon as the Fort Dodge & Omaha line is completed.

An official writes that nothing is as yet determined as to the building of the line from Lyle, Ia., to run northwest about 30 miles to Albert Lea, Minn., connecting the Minneapolis & St. Paul. (April 7, p. 253.)

JONESBORO, LAKE CITY & EASTERN.—Grading is reported begun on the proposed extension from Nettleton, Ark., northwest about four miles into Jonesboro, and the company hopes to have the extension completed by July 1. The road was completed from Nettleton east about 30 miles to Leachville last year, and is to be extended east to Luxora on the Mississippi River about 35 miles further. A. J. Kerfoot, of Jonesboro, is General Manager. (March 3, p. 161.)

KANSAS CITY, ST. JOSEPH & OMAHA, OF KANSAS CITY.—This has been incorporated in Missouri with a capital stock of \$1,500,000 to build a line 127 miles long through the counties of Jackson, Clay, Platte, Clinton, Buchanan, Andrew, Holt and Atchinson. Among the incorporators are: C. N. Atkinson, R. E. Morris, E. F. Swinney and Wm. F. Rankin. This company may be connected with the St. Joseph & Omaha. Notice of its incorporation was given last week. (April 14, p. 271.)

LAKE SHORE & MICHIGAN SOUTHERN.—The General Superintendent of the New York, Chicago & St. Louis Co. writes that he has no knowledge of the intention on the part of his company to build the two extensions in Lorain County, O., recently reported. (April 7, p. 253.)

LEXINGTON & EASTERN.—A move is reported under consideration to extend this line which now runs from Lexington, Ky., southeast 92.54 miles, to Jackson, from a point near Jackson, probably Tallaga, to run south about 35 miles via Boone into Clay county. Allen Sutton, an attorney of Booneville, is representing the people of his city.

LITTLE ROCK, HOT SPRINGS & TEXAS.—Colonel S. W. Fordyce, of St. Louis, formerly President of the St. Louis Southwestern and head of the syndicate which bought the Little Rock, Hot Springs & Texas, has submitted a proposition to the citizens of Hot Springs to raise a fund of \$75,000 for aid in building the road. The company was incorporated in Arkansas in 1893 to build from Little Rock west 155 miles to Wistar, Ind. Ter. The line was finished between Benton, Ark., and the Sabine River, four miles, in 1895, and was later graded to Hot Springs, 31 miles. (Feb. 3, p. 192.)

MINNEAPOLIS & ST. LOUIS.—An offer has been made to the people of Britt, Ia., for an extension from that city south into Wright County. The road will be used as a feeder of the M. & St. L. John I. Blair is interested.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—The directors have authorized an issue of \$5,000,000 4% bonds to take up floating indebtedness, buy terminals at Minneapolis and make needed betterments.

MINNESOTA & MANITOBA.—This company has been incorporated in Minnesota, with a capital stock of \$1,000,000, to build the American end of the line between Duluth, Minn., and Winnipeg, Man. The Canadian end is being built by the Manitoba & Southeastern, and is to form part of the system projected by Mackenzie & Mann, who are also building

a line from Port Arthur west. The incorporators of the new company are: Hector Baxter, Clarence H. Childs, Charles E. Sanford, Edward W. Hawley and David W. Knowlton.

MT. JEWETT, CLERMONT & NORTHERN.—Chief Engineer A. G. McComb is grading the proposed extension of this line near Smethport. The route is from Hazelhurst, Pa., east about 11 miles via Marvendale and down Marvin Creek to Smethport. Three miles is graded north of Smethport and 100 men and several teams are at work. Surveys are completed, the line adopted, the rails bought and a majority of the rights of way bought for the entire distance. Contracts will be let in about two weeks. The work is very light. (April 14, p. 271.)

NEBRASKA, WYOMING & WESTERN.—This company was incorporated in Wyoming April 11, with a capital stock of \$1,000,000, to build an extension of the Chicago, Burlington & Quincy across that state, running along the valleys of the North Platte, Sweetwater and other rivers and through the counties of Laramie, Converse, Natrona, Sweetwater and Uinta to the western boundary line of the State. The incorporators are: G. W. Holdredge, J. G. Taylor and W. P. Durkee, officers of the C., B. & Q.

NEWFOUNDLAND.—During the past year the Newfoundland has completed its Placentia branch from Whitbourne, N. F., to Placentia, 27 miles; its Brigus & Carbonear branch, from Brigus Junction to Carbonear, 38.34 miles, and the Tilton & Carbonear branch, from Whitbourne to Tilton, 15 miles. In addition to these the main line is completed from St. John's east across the island to Port-aux-Basques, 548 miles. The company is at present building the Burnt Bay branch from Quinette north to Burnt Bay, 9½ miles. It proposes soon to build an extension from Dunsmore to St. John's at the west end terminus. Of this 6½ miles is to be completed in 1899. (April 7, p. 253.) W. D. Reid, St. John's, N. F., is General Manager. (Official.)

PENNSYLVANIA.—The General Manager writes that the company has under contract the two track tunnel at Spruce Creek at Pennsylvania, referred to last week (p. 272). This will complete the four track system at that point. The location at the river is such that two bridges will be required.

This company does not contemplate elevating its tracks in Washington, D. C. Application has been made to the Board of Highway Supervisors at Philadelphia for permission to extend this company's tracks from Girard Point to Greenwich Point, skirting League Island Park.

PENNSYLVANIA CO.—Work has progressed materially on the building of the four track road from Avalon, Pa., to Glenfield, about four miles. There will be considerable readjustments of the curves near Leetsdale and Fair Oaks. When this work is completed the Ft. Wayne Division from Allegheny to Rochester, Pa., will be a complete four track line. West of Richmond the road has already two tracks. The cost of these improvements will be approximately \$475,000. (Official.)

PHILIPPINE ROADS.—M. André, Belgian Consul at Manila, states that the money for building the railroad south from Manila to Batangas, about 75 miles, has already been subscribed in Belgium. (April 14, p. 272.)

PORTLAND & ROCHESTER.—The Superintendent writes that he is aware of no intention on the part of the company to straighten the line in the vicinity of Alfred, Me., as recently reported. (March 24, p. 217.)

ST. LOUIS & SAN FRANCISCO.—Citizens of El Reno, Okla., have gone to St. Louis, Mo., seeking an extension of this line from Oklahoma City west 28 miles to El Reno. The proposed line would parallel the Choctaw, Oklahoma & Gulf.

ST. LOUIS, KANSAS CITY & COLORADO.—Surveys are reported in progress for an extension of its line from Union, Mo., west about 120 miles to Versailles, Morgan county.

SAN PETE VALLEY.—This company, according to report, whose line now runs from Nepolia, Utah, southeast five miles to Morrison, proposes to build a six mile branch up the left fork of the Andrews Canyon. Theo. Bruback of Salt Lake City is President.

SOUTHERN.—Press reports state that this company has determined to extend its line from Columbia, S. C., south to Savannah, Ga., and that surveys are begun on the route.

Side tracks will be built at once, according to report, in a number of towns along the lines in Tennessee.

An official writes that there is no foundation for the report that the company will build from Albermarle, N. C., to Big Falls. (April 7, p. 254.)

SOUTHERN PACIFIC.—California press reports state that a spur is to be built in Kern County over the Wible switch on the Asphalt branch near Bakersfield, to run south eight miles to the Sunset oil wells, and that work is to be begun soon.

TEXAS CENTRAL.—Right of way agents are bringing condemnation suits along the proposed extension of this line from Albany, Tex., northwest about 40 miles. The company will begin building as soon as the surveys are completed. (March 17, p. 198.)

TEXAS MIDLAND.—The company is widening its fills and changing grade so as to get a maximum of 1½ grade on the old line between Greenville, Tex., and Ennis, and putting in burnt gumbo ballast, about 2,500 yds. to the mile. It is also widening the fills and putting in similar ballast on the Paris extension between Commerce and Paris. It is expected to have the work completed by the middle of July. (Official.)

TEXAS NORTHERN.—Surveys are reported in progress and grading is soon to begin, according to report, on this line from Anderson, Tex., south 12 miles to Stoneham, on the Conroe branch of the Atchison, Topeka & Santa Fé. T. C. Buffington, of Anderson, is Vice-President, and H. J. McNair, Chief Engineer. The company was chartered last month. (March 10, p. 180.)

WASHINGTON MIDLAND SOUTHERN.—Articles of incorporation were filed in the office of the Washington Secretary of State April 8 for this company with a capital stock of \$7,500,000. The route is not specified, the object stated being only to do a general building, equipment and contracting work.

The principal business place is Spokane, Wash. G. W. Adrian and J. W. Morrison, of Spokane, and E. D. Kelly, of Minneapolis, Minn., are incorporators.

WASHINGTON ROADS.—C. J. Smith, of Seattle, has petitioned the City Council of that city for a franchise for a new railroad from the harbor front to the new coal fields near Franklin southeast of that city.

Surveys are reported in progress from a point opposite Old Celilo on the Washington side of the Columbia River to run northeast to Columbia Gap, and thence to Goldendale. Dr. Blalock, of Walla Walla, is reported interested.

WEST FORK & SOUTHERN.—This company was incorporated in West Virginia April 10, with a capital stock of \$2,000, to build a railroad from a point on the Monongahela River line of the Baltimore & Ohio, near Bartlett Station, to run up Jack River to Bartlett Sulphur Springs in the same county. The stockholders are: J. T. Jones, X. Y. McCann and I. M. Kelly, Clarksburg, and J. M. Wilcox and Clyde Hawkins, of Parkersburg. The principal office is Clarksburg, W. Va.

WEST VIRGINIA & PITTSBURGH.—The extension from Camden-On-Gauley, W. Va., south about 9½ miles to the mouth of Cherry River, on which grading was begun March 1, will have five bridges of an average length of 280 ft. and a tunnel 400 ft. long. Bids are ready for this portion of the work. J. Fucy, of Western, W. Va., has the grading contract. (March 31, p. 236.)

WHITE PASS & YUKON.—Grading is completed from Skaguay, Alaska, 30 miles to a point near Log Cabin, B. C., and track is laid for 26 miles from Skaguay. The line is projected to run from Skaguay north via White Pass, Log Cabin, Bennett City to Ft. Selkirk, N. W. T., 370 miles, with a branch from Log Cabin, B. C., to Atlin, 35 miles. The section from Skaguay to Bennett is under contract to the Pacific Contract Co., Ltd., Seattle, Wash. (March 3, p. 162.) E. C. Hawkins of Seattle, Wash., is General Manager. (Official.)

WICHITA & DENISON.—This company is incorporated in Oklahoma with a capital stock of \$5,000,000, to build a railroad from Denison, Tex., to run north 325 miles through Indian Territory and Oklahoma to Wichita, Kan. The directors and officers are given under Elections and Appointments.

WYOMING & BLACK HILLS.—This company has been organized under the laws of Wyoming, with a capital stock of \$5,000,000, to build a railroad from Marino, Wyo., via Deadwood and Belle Fourche to the Black Hills of South Dakota, 72 miles, connecting the Chicago, Burlington & Quincy and the Chicago & Northwestern. It is proposed to issue \$1,000,000 of 5% 25-year first mortgage gold bonds. The officers are given under Elections and Appointments.

YORK SPRINGS.—About two miles is graded on this line from Dillsburg, Pa., on the Cumberland Valley of the Pennsylvania to run southwest about 12 miles to York Springs, and thence to Gettysburg. The work is easy. There is one grade of 8½ ft. and the curves do not exceed 3". J. H. Dobbins of York, Pa., has the contract. (April 7, p. 254.) The officers are given under Elections and Appointments. (Official.)

YUKON MINING, TRADING & TRANSPORTATION.—Messrs. McCracken, Henderson & McGivern of Ottawa have given notice of application to the Canadian Parliament at its present session for an act to revive the act of 1897 incorporating this company and extending the time for building. The road as projected is to extend from Taku Inlet to Teslin Lake. (Sept. 17, 1898, p. 658.)

Electric Railroad Construction.

ALBANY, N. Y.—The Albany Ry., according to report, has made an agreement with the Troy City Ry. Co., which is now building an extension to connect with the Albany Ry. tracks, whereby the tracks of the latter company may be used by the former.

ALLENTOWN, PA.—Work has been begun at Bethlehem on rebuilding the line of the Allentown & Lehigh Valley Traction Co., which is estimated to cost \$40,000.

APPLETON, WIS.—Surveys have been begun for the Fox River Valley Electric RR. extension between Oshkosh and Kaukauna, Wis. (March 3, p. 162.)

BUCYRUS, O.—Rails and ties for the Ohio Central Traction Co., heretofore spoken of as the Bucyrus-Galion-Crestline Electric RR. Co. are now being delivered and will soon be distributed along the route. The City Council of Gallon recently accepted the bond of \$5,000 furnished by the American Surety Co., of New York, to C. E. Thompson, Wells Campbell, John I. Bradley, Fred. C. Boyd and Wm. Anthony, of New Haven, Conn., assignees of W. E. Haycox, Mansfield, O., to whom has been granted a franchise to build an electric railroad to connect Gallon, Crestline, Leesville, Cross Roads and Bucyrus. It is proposed to have part of this road completed and in operation by June 1. This project has been spoken of for several years and now seems to have secured the necessary financial aid. The entire road will be 14 miles long.

BUFFALO, N. Y.—H. N. Bates, General Manager of the Continental Construction Co. of Boston, which has the contract for building the Buffalo, Hamburg & Aurora Electric RR., has arrived in Buffalo and will begin work on the road in a few days. Orders have been placed with the Cambria Steel Co. for rails. More than half the ties have been delivered, and 8,000 more were ordered April 8. It is proposed to have the road completed and in operation between Buffalo and Hamburg and Orchard Park by August 1. Bids have already been received for the power house and car barns construction, which are to be built at Benzinger Crossing, two miles north of Orchard Lake. Work is to be begun on these buildings May 1. U. L. Upson, General Manager of the railroad company, will ask bids in a few days on the grading, which will be sublet by the Continental Construction Co. The bridges and cars necessary for this road were mentioned in this column January 20, p. 54.

BUTTE, MONT.—We are informed that all contracts are let and work is begun on the two miles of extension of double track to the Columbia Gardens by the Silver Bow Ry. Co. (April 7, p. 254.)

CAMDEN, N. J.—Negotiations are in progress be-

tween the Board of Freeholders and the Camden & Suburban Ry. Co., to grant the street railroad permission to use the State St. and Federal St. bridges, and to put in electric motors to operate the draws of the bridges.

CARROLLTON, MO.—Frank B. Crouch, President and General Manager of the Carrollton Electric Ry. Co., informs us that it is the intention of the company to soon begin surveying for an extension of the present standard gage electric road of 28 miles from Carrollton to Waverly, and thence to Higginsville. He says that at Waverly the road will intersect one of the finest coal districts of the State, and as the road will be used for freight and passengers, he believes it will be a paying investment. Sixty-pound rails will be used.

CHATTANOOGA, TENN.—The Lookout Incline & Lula Lake Ry., J. T. Crass, President and Manager, has asked permission to remove the tracks of the electric railroad to a more convenient route. This company has also in contemplation for the near future an extension of the electric railroad on the top of Lookout Mountain, which is now 2½ miles long, from Point Park to Ross Ave., so as to reach Lula Lake and Rock City.

CHICAGO, ILL.—The Lake St. Elevated ran its first cars over its incline and Western extension on April 14, one day sooner than the franchise required, this saving its 50-year extension franchise. The road now completed extends from the present Lake St. Elevated terminus at West 52d Ave. through the town of Austin to Lombard Ave. Regular service from Park Ave., Austin, was commenced April 17, and the rest of the line is almost ready to handle passengers. (Dec. 30, 1898, p. 935, and March 17, p. 198.)

Judge Crosscup in the United States Circuit Court, April 15, approved the petition of Receiver John McNulta of the Calumet Electric St. Ry. Co. to improve the terminal facilities of the road. The receiver is empowered to expend \$45,000 in installing in the terminal station at Stoney Island Ave. and 63d St., a heating plant and electrical machinery. (May 6, 1898, p. 334.)

The difficulty between the Northwestern Elevated RR. and the City of Chicago has been settled and the company has received permission to proceed with its work at Chicago Ave. and Market St.

CINCINNATI, O.—The Cincinnati, Lawrenceburg & Aurora Electric St. Ry. has been granted by the Council of Fernbank a 25-year franchise through that city and a right to charge a five-cent fare to Anderson's ferry. Part of the contracts have already been let for building this road and preparations are about completed for letting the contracts for the second section, 10 miles. E. F. Layman, Engineer of the company, has completed the surveys for the line as far as Greendale, where the Lawrenceburg branch strikes off. This leaves but a few miles to be surveyed to Rising Sun, Ind. Part of the road will probably be in operation by Nov. 1. J. C. Hooven is interested. (March 17, p. 198.)

CUMBERLAND, MD.—President Isaac A. Walker and Secretary and Engineer D. Howell, of the Cumberland & Frostburg, the Frostburg & Lonaconing and Lonaconing & Westernport railroads, resigned at a meeting of the directors April 11. This meeting was held to close up the affairs previous to beginning the building of the road, and Mr. Walker's resignation was on account of holding the contract for construction, thereby invalidating him from acting as a director. The official contract was signed the same day. A. Brockerhoff, Hunter Eckert, Richmond L. Jones and John A. Rigg, all of Reading, Pa., were elected Directors in place of J. E. Cochran, Chester, Pa.; Frank B. Sweetem, Camden, N. J.; Isaac A. Walker and E. F. Walker, Philadelphia, resigned. Surveys have already been completed for this road, which will probably be 27 miles long, between Cumberland and Westernport. (Jan. 6, p. 16.)

DAYTON, O.—The County Commissioners have granted the application of the Dayton & Germantown Traction Co. for a franchise. This company was incorporated last July with a capital stock of \$100,000, to build an electric railroad from Dayton to Germantown, probably 25 miles, where a large hotel is to be built. Work will be begun from Dayton about May 1. The officers of the company as now constituted are: President, J. A. Arnold; Secretary, T. C. Lindsey; Treasurer, B. F. Douglas.

DERRY, N. H.—About 150 shares are reported subscribed to the Derry & Pelham Electric Ry., which is to build an electric railroad about 15 miles long between the places named. Wm. H. Anderson, of Lowell, Mass., is among the incorporators. (March 17, p. 198.)

EASTON, PA.—The Easton & Bethlehem Transit Co., which is leased to the Easton Consolidated Electric Co., has completed arrangements for building a belt line in West Easton by extending the tracks from Dock St. The plans have been approved by the City Council.

ELYRIA, O.—The Lorain County Ry. has made application for a franchise to build a street railroad through various streets and avenues of Lorain. The company was incorporated in March, with a capital stock of \$100,000. Parks Foster, of Elyria, is one of the incorporators. (March 3, p. 162.)

FORT WORTH, TEX.—Judge J. E. Martin is said to be interested in a project to build another electric railroad in Fort Worth.

GREENFIELD, MASS.—The two-mile extension for the Greenfield & Turner's Falls St. Ry. to Montague Center will be built by the Montague Electric St. Ry., now being organized for the purpose. F. E. Lowe is President of the Greenfield & Turner's Falls.

HAMILTON, O.—The Cincinnati & Miami Valley Traction Co., which in the early part of the year perfected a reorganization of the directors and officers and at the time considered the advisability of a number of improvements, is now reported as about to expend about \$100,000 in rearranging and rebuilding the lines. Abraham Israel, of New York; Howard Loeb, of Philadelphia, and Max Austenberg, of the Executive Committee, are now examining the properties. (Jan. 27, p. 76.)

JACKSON, MISS.—One hundred men are now at work on the Jackson Light, Heat & Power Co.'s electric railroad, changing the present horse car lines to electric and building an extension. About a half-mile of track has been laid and grading for the entire five miles completed. S. T. Carns, President.

JOHNSTOWN, PA.—At a meeting of the City Council April 11, another ordinance granting right of way over certain streets of Johnstown to the Johnstown & Somerset Traction Co. was presented by H. S. Endsley, solicitor for the company. No time is specified for the completion of the road. This company proposes to build a standard gage road of about 10 or 12 miles, beginning at Johnstown, running through Getstown, Scalp Level to Winder. It is proposed to begin work on the survey as soon as the right of way is granted through Johnstown. Morris L. Woolf is President and Edward A. Barry, Secretary and Treasurer. This company now owns right of way over part of the proposed route. (Oct. 21, 1898, p. 769.)

KANSAS CITY, KAN.—Plans have been perfected by the Kansas City & Leavenworth Traction Co., which was granted a charter in Kansas March 30, to build an electric railroad 26 miles long between Kansas City and Leavenworth. Willard E. Winner is the promoter of this enterprise and it is said that D. H. Kimberly, a Cleveland, O., capitalist, is also interested. The capital of the company is \$1,000,000, and it is estimated that the proposed road will cost \$400,000. The directors of the company are as follows: Willard E. Winner, of Lansing, Mich., but doing business in Kansas City, and C. H. Chapin and C. H. Matthews, of Kansas City Kan.; C. O. Everts, Herbert W. Wolcott, D. H. Kimberley, W. H. Gabriel and H. E. Allison, Cleveland, O., and Charles H. Wheeler, of Akron, O. The K. C. & L. T. has secured a double-track road 1¼ miles long, connecting the western termini of the Grand View and Chelsea Park electric lines of the Metropolitan St. Ry. in Kansas City, Mo. About one mile of this grade will be used, but the 52-lb. rails now used will be replaced by new 60-lb. rails. The plans for the power house, which will probably be located at Connors, Kan., estimate \$180,000 as the probable cost for equipment, which in part include two 1,200-H. P. engines. It is stated that the company is also negotiating for the purchase of the Leavenworth Electric RR., which is about 15 miles long.

LACONIA, N. H.—The Laconia St. Ry. Co., which is to build an extension to The Weirs, has been granted permission by the Railroad Commissioners of New Hampshire to increase the capital stock, and also to cross the tracks of the Boston & Maine. L. S. Pierce, President, Leominster, Mass.

LERDO, MEXICO.—We are officially informed that the Tranvias de Lerdo a Torreón, S. A., operating two branches, one from Lerdo to Gomez, Palacio, five km., and another from Gomez Palacio to Torreón, of the same length, and at present operating 18 cars by horse power, will build another line and will establish electric power. José Sarifana is President.

LOS ANGELES, CAL.—The Los Angeles Ry. Co. has been granted an extension of 60 days to complete the electric railroad now building. F. C. Hanon has the contract to furnish the material and finish the road from the corner of First and Los Angeles Sts.; thence north to Aliso St.; thence east to the bridge over Los Angeles River; also beginning at the east end of the bridge; thence along Aliso St. to Brooklyn Ave. to Evergreen St. (March 17, p. 199.)

LOWELL, MASS.—The Lowell & Suburban St. Ry., according to report, will build a connecting line from Lowell, Mass., to Pelham, N. H., and eventually make a line through to Nashua, N. H.

MT. CLEMENS, MICH.—The Rapid Railway Co., which is to build between Port Huron and Detroit, about 58 miles, has been granted a franchise by the Council of St. Clair, which provides that work must be begun by May 1 and finished and in operation by Nov. 1, and it is planned to run eight trains per day to and from Detroit. The present terminals of the RR. Co.'s system are at the Michigan Central railroad depot in Detroit and the center of Mt. Clemens on the north. The northern terminal of the new road will be Port Huron. This will give a through system from the Mt. Clemens depot in Detroit through Mt. Clemens, the St. Clair Flats, Algonac, Marine City and St. Clair to Port Huron. Cornelius J. Reilly is President; Chas. M. Swift, Treasurer, and F. W. Brooks, General Manager. (March 31, p. 237.)

NATICK, MASS.—The new line of Natick & Cohituate St. Ry. Co., from Wellesley, about four miles, to Needham, was formally opened April 6. (March 24, p. 219.)

NEW CASTLE, IND.—The New Castle Electric Ry. is reported to have acquired franchises over all the turnpikes in Henry County, and it is said these franchises will probably be merged with the interests of Indianapolis capitalists, who propose to build an electric railroad between Indianapolis and Richmond via New Castle. T. H. Gordon is President of the New Castle Electric; S. P. Jennings, Vice-President; J. F. Thompson, M. D., Secretary and Treasurer. The road will also run through the towns of Knightstown, Middletown and probably Anderson and Muncie. The distance between Indianapolis and Richmond is 60 miles.

The Indianapolis & Greenfield Rapid Transit Co. is the company which proposes to build from Indianapolis east to Greenfield and to connect with the New Castle Electric Ry. The company now holds franchises and right of way through Marion County and across Hancock County to Henry County. (See Richmond.)

NEWPORT NEWS, VA.—The Peninsular Ry. Co. has received about three-fourths of the rails required for the road and 11,250 ties. An ordinance is before the City Council which permits this company to use the 25th St. and 34th St. bridges; it also requires half fare to workmen (no time limit) and to school children on school days in the morning and afternoon. The city reserves the right to grant another company permission to parallel the 34th St. and Lafayette Ave. branches of this company.

NORFOLK, VA.—The Port Norfolk Electric Ry., which now operates about eight miles of road, and which has been in the hands of B. W. Leigh as Receiver since Oct. 27, 1898, is reported sold to a syndicate represented by Senator Maynard and John L. Watson. It is said that the proposed extension to Smithfield, a distance of about 27 miles, which has been in contemplation for some time, will be built and probably be in operation by September. In December, 1898, the receiver was granted authority to issue certificates for \$15,000 to cover the cost of improvements.

PEEKSKILL, N. Y.—The Peekskill Traction Co.,

organized in April, 1898, and which has ever since been planning to build about 12 miles of electric railroad, is reported to have elected the following officers on April 15: President, Frank Frye; Vice-President, Chas. Mason; Treasurer, J. L. Jarvis; Secretary, Jacob Lorsch. Mathew Clune, J. F. Martin, Jas. H. Haight, Hanford Smith and J. R. Decatur are Directors. It is said that work will soon be begun on the proposed road which will be from the Hudson River RR. station to the State Military Camp, Lake Mohegan and Verplanck's Point. The company is said to own franchises over nearly all the right of way.

PHILADELPHIA, PA.—President A. M. Taylor, of the Philadelphia & West Chester Traction Co., is reported as stating that the company will be ready to start work on the High St. extension in West Chester in about two weeks. This is the extension which will connect with the West Chester St. Ry. (March 17, p. 199.)

PITTSBURGH, PA.—E. F. Woods, formerly of the Union Gas Co., is interested, according to report in a proposed electric railroad from 13th St. bridge, McKeesport, to Lincoln Township.

RICHMOND, IND.—The Richmond Inter-urban Traction Co., which is interested in the proposed road between Richmond, New Castle and Indianapolis, is surveying a route for a branch road south to Harrison, O. The company has an application on file for a franchise over the National road west to the Henry County line. It already owns several franchises. (See New Castle.)

RIVERSIDE, CAL.—Bids will be opened May 2 and franchises sold by the City Council to the highest bidder for a standard gage electric railroad beginning at the intersection of Main and Seventh Sts., and running thence easterly along Seventh St., to the right of way of the Southern California Ry. This is the right of way applied for by Frank A. Miller, General Manager of the Riverside & Arlington Ry. Co. (March 10, p. 181.)

SAN JUAN, PORTO RICO.—The San Juan & Rio Pedras RR. Co. was incorporated in New York State April 17. The incorporators are P. H. McMillan and F. K. Curtis, 130 Broad St., New York, and J. J. Kennedy, R. B. Merchant, Warren H. Spurge and Robert Seager of 29 Broadway, New York. The object of this company is to build an electric railroad and to furnish electric light in Porto Rico. The company has bought the steam road running from San Juan to Rio Pedras by way of San Antonio, about seven miles, which was formerly known as the Ubarri road. J. G. White & Co. New York, recently informed us that they had the contract for changing the seven miles of this road to electric power, using the overhead trolley system, beside building an extension of 1½ miles. The plant for furnishing power for both transit and lighting will be located near San Antonio. John A. Wilson, General Manager of the company, is now in Porto Rico.

SALT LAKE CITY, UTAH.—Work has been resumed on the Brigham St. extension of the Salt Lake City RR., and Superintendent W. F. Reed is reported as stating that it will be in operation by May 1. The company has already ordered four new cars.

SAN FRANCISCO, CAL.—The San Francisco & San Mateo Electric Ry. Co. has about completed its double track from 30th St. to the Fairmount School and the whole road will probably be completed within two weeks. (Dec. 2, 1898, p. 869.)

SYRACUSE, N. Y.—The Syracuse Rapid Transit RR. Co. has been authorized by the Common Council to place a Y at the corner of South Salmon St. and Anna St. and to extend its double tracks through Salina St. Salina St. is now being repaved and the railroad company will change its line on that street before the work is begun.

TROY, N. Y.—The Troy City Ry. Co. is rapidly completing the extension on Congress St. and Fifth Ave. to Ferry St. The Albany Ry., which is to build an extension to connect with this company's lines, is reported to have made an agreement whereby both companies may use the same tracks.

WALTHAM, MASS.—A. E. Viles, 53 Tremont St., Boston, and Winthrop Coffin, 60 State St. Boston, are said to be interested in the incorporating of a company to be known as the Waltham, Weston & Wayland St. Ry. Co.; to build an electric railroad over the six miles between the places named.

WASHINGTON, D. C.—The Stevens-Crosby syndicate, which now practically has control of all the street railroads in Washington, has let a contract to E. Saxton for the underground electric work on the Anacostia & Potomac River Ry. and the Belt Line Ry. The contract for the cast iron work for the entire 16 or 17 miles of the two roads has been let to Davies & Thomas, of Catasauqua, Pa., the amount involving between \$75,000 and \$100,000. About 30 miles of rails will be required for the entire road, for which Wm. Wharton & Co., of Philadelphia, has the contract.

The building of the City & Suburban Ry. is nearly completed. The conduits and rails have been laid over the entire G and C St. portions and the concrete is now being laid. It is expected to have the entire road completed and in operation by early summer.

An underground electric system similar to the one being installed by the City & Suburban Ry. will be installed by the Capital Traction Co. on the U St. line.

The Washington & Gettysburg Ry. Co. (March 17, p. 199), which at the last session of Congress was authorized to build a railroad, presumably electric, from the District of Columbia as a part of the line which is to be built from the Gettysburg battlefield, Pa., to the District, has perfected organization by electing the following as Directors: S. W. Woodward, Crosby S. Noyes, E. S. Parker, J. Enos Ray, Albert Gleason, Allan Farquhar and George H. Harries. At a meeting of the Directors, officers were elected as follows: President and General Manager, George H. Harries; Vice-President, S. W. Woodward; Secretary and Treasurer, Brainard W. Parker; General Counsel, John B. Lerner. Stock to the amount of \$100,000 has been subscribed and President Harries was directed to begin the work of construction. From Gettysburg the road will run to Frederick, Md., thence to Sandy Springs, through Sligo Valley to the terminus of the City & Suburban Ry. in Washington.

WATERTOWN, N. Y.—The Black River Traction Co. is said to be considering an extension north to Dexter, at the head of Black River Bay, where a

summer resort is to be established. This extension, which is four miles long, has been spoken of before.

WAYNESBORO, PA.—At a meeting of the stockholders of the Blue Ridge Electric Ry. Co., at Waynesboro, April 9, Directors were elected as follows: Augustus Beck, J. Reilly Weaver, H. A. Knabe, of Baltimore; Dr. J. B. Amberson, J. N. Snively, A. H. Strickler and Geo. W. Smith, of Waynesboro; J. P. Rouzer, C. H. Burhman, of Rouzerlyville, and Major R. Norwood, of Blue Ridge Summit. B. F. Welty was elected President; Mr. Beck, Secretary, and Mr. Rouzer, Treasurer. This company was formed about two years ago to build an electric railroad from Waynesboro to summer resorts near Pen-Mar. Sufficient capital is secured to insure the building and equipping of the road, which is estimated to cost about \$150,000. When the company was first organized all the right of way was secured.

WESTBROOK, ME.—We are officially informed that it is expected that five miles of the Westbrook Windham & Naples Ry., formerly known as the Westbrook, Windham & Harrison Electric Ry., will be built this season. John C. Scates is President; James F. Hawkes, Vice-President, Portland, Me.; Jas. A. Tolman is Engineer of the company. (April 14, p. 273.)

WHEELING, W. VA.—John J. Coniff, attorney, has petitioned the City Council for a franchise for the People's Ry. Co. to operate an electric railroad in Wheeling.

WHITE PLAINS, N. Y.—The Tarrytown, White Plains & Mamaroneck Ry. Co. has been granted a franchise by the Highway Commissioners of Scarsdale, Westchester County, to extend its lines from White Plains through Scarsdale to Mt. Vernon. President Jennings, of the company, says that work will be begun in about 30 days and that the line will be built by the Union Ry. Co., of New York, which now operates all the trolley lines in the Bronx Borough, and which recently secured control of this company. The new line will extend from White Plains on the old Post road, from Scott's Corners to Tuckahoe, where another branch will be built on North St., connecting with the present line which runs to New Rochelle. An extension will also be made from Mamaroneck to join the present system at New Rochelle, over the Boston Post road. It is proposed later to extend the system which now runs from Mt. Vernon to Yonkers and then to Hastings to connect with the lines of the T. W. P. & M. (March 31, p. 237.)

GENERAL RAILROAD NEWS.

CENTRALIA & CHESTER.—Two foreclosure suits were introduced against this property in the United States Circuit Court, April 18. One was by the Farmer's Loan & Trust Co., for \$1,278,000, first mortgage, and the other by the Missouri Car & Foundry Co., to have the receiver's certificates amount to \$224,000 made alien prior to the mortgage bonds. Judge P. S. Grosscup of Chicago and Judge W. J. Allen of Springfield, Ill., decided in favor of both suits. (March 24, p. 219.)

CENTRAL PACIFIC.—Speyer & Co. announce that over 91% of the bonds, and 99% of the stock have been deposited under the reorganization agreement of February 8. Further deposits will be received up to April 29 on a cash payment of 1% on the par value of the bonds, and an additional cash payment of \$1 per share of stock deposited. (March 31, p. 237.)

CHICAGO, PEORIA & ST. LOUIS.—The reorganization committee, consisting of Thos. Carmichael (Chairman), Chas. F. Dean and Edward H. Ladd, Jr., has issued a plan of reorganization providing that this company shall be reorganized under the title of the St. Louis & Peoria Ry., uniting with itself the St. Louis, Chicago & St. Paul. The section between Litchfield, Ill., and a point four-tenths of a mile north of Madison, 43.97 miles, is to be owned by a separate corporation, probably under the name of the Litchfield & Madison. The three lines will comprise about 230 miles of road.

The new issues of the St. Louis & Peoria will be prior 4% 30-year gold bonds, subject to call at 107%, limited to \$2,000,000, of which \$1,250,000 is to be issued at once to discharge car trusts, receiver's certificates and other liens on the property ahead of existing mortgages, and for betterments, terminals, reorganization expenses, etc.; the other \$750,000 will be used for future additions, betterments, equipment, etc.; consolidated 5% 30-year gold bonds, subject to call at 105, \$2,000,000, including \$649,000 for the St. L. C. & St. P.; non-cumulative 5% income mortgage bonds, subject to call at par, \$2,000,000, including \$649,000 for the purchase of the St. L. C. & St. P.; 5% non-cumulative preferred capital stock, \$3,750,000, including \$550,000 for the St. L. C. & St. P.; common stock, \$3,600,000, including \$1,100,000 for the St. L. C. & St. P.

The new Litchfield & Madison will issue \$500,000 of non-cumulative 5% income mortgage bonds, subject to call at par, and \$500,000 common stock. The exchanges of the old Chicago, Peoria & St. Louis bonds will be as follows: For each \$1,000 first mortgage bond, including unpaid coupons, new consols, \$350; new preferred stock, \$450; new L. & M. income bonds, \$50. For each \$1,000 second mortgage income bond, with unpaid coupons, new preferred stock, \$350; new non-accumulative income bonds, \$50; new L. & M. income bonds, \$100. For each \$100 of preferred stock, \$15 of new preferred stock, and for each \$100 common stock, \$100 of new common stock. The joint earnings of the new system are estimated at \$1,200,000, and the net earnings \$225,000. The fixed charges on the bonds under the reorganization will be \$156,250, leaving a balance of \$68,750 for the preferred and common stock.

The Chicago, Peoria & St. Louis went into the hands of receivers on July 20, 1898, and the St. Louis, Chicago & St. Paul, June 13, 1893. The latter road was sold on April 3, 1897, and the new company took possession June 1 of that year. (April 14, p. 273.)

CLARION RIVER.—This property, according to report, has been sold for \$180,000 to a syndicate of New York capitalists, headed by John Bryne. It runs from Crolyland, Pa., west 12 miles to Halliton and has a capital stock of \$120,000. It is proposed to extend the road east from Crolyland to the Buffalo, St. Mary's & Southwestern near Centreville and also to extend from the western end at Halliton southwest to Brookville. (March 24, p. 217.)

DETROIT & SHORE LINE.—The Ferguson Contracting Co., of New York, on April 17 made application for a receiver for this company. The D. & S. L. is successor to the Toledo & Ottawa Beach and is building a line from Toledo to Detroit. All the grading in Ohio was completed last December.

FALL BROOK.—The stockholders will meet in Reading, Pa., April 27, to consider and for approval

of a contract for the lease of this line to the New York Central & Hudson River. (Feb. 24, p. 147.)

GREAT NORTHERN (CANADA).—A meeting of stockholders is called for May 9 to consider among other things the purchase of the Lower Laurentian, including the rolling stock and all the properties, and issue first mortgage bonds not to exceed \$20,000 per mile. The line runs from St. Tite Junction northeast to Riviere a Pierre, Que., 39 miles, with a branch to Laurentide's Saw Mill, 0.5 mile. The capital stock is \$1,500,000 and the funded debt authorized, but not issued \$730,000. The Dominion has given aid of \$217,600 and Province of Quebec \$252,000. The line will be used as a portion of the extension of the Great Northern into Quebec.

HENDERSONVILLE & BREVARD.—This property has been sold for \$54,450 cash to the Toxaway Co., and a new company will be organized soon.

KANSAS CITY, PITTSBURGH & GULF.—Holders of stocks and bonds are notified by the committee of which Ernst Thallman is chairman, that the recent appointment of receivers renders it of the highest importance for their protection that their holdings of stock and bonds be immediately deposited with the Mercantile Trust Co.

KINGS COUNTY ELEVATED (Brooklyn).—The Belmont committee has prepared a plan of reorganization which provides for the following issues: First mortgage 4% gold bonds, due 1949, \$7,000,000, of which \$5,000,000 are to be issued at once, and \$2,000,000 to remain in the treasury for future improvements; preferred stock 5% per annum, non-cumulative (to be exchanged for \$1,400,000 Brooklyn Rapid Transit stock), \$2,800,000; the common stock (to be exchanged for \$600,000 of Brooklyn Rapid Transit stock), \$6,000,000. (Feb. 24, p. 148.)

OTIS ELEVATING.—Press reports state that this property was sold at foreclosure April 18 at Catskill, N. Y., to the bondholders committee for \$10,000. It extends from Otis Junction, N. Y., to Otis Summit, 1.35 miles. It has a capital stock of \$145,600, and a funded debt of \$118,000.

PITTSBURGH, CINCINNATI, CHICAGO & ST. LOUIS.—John H. Judge, representing the minority stockholders, on April 11 made a protest at the annual meeting held at Pittsburgh, concerning the alleged inordinate expenditures of the management for improvements. This is in line with the case recently brought in the courts by stockholders. (Feb. 17, p. 134.)

SEABOARD AIR LINE.—The syndicate headed by J. R. Williams & Sons, of Richmond, which has acquired this road with other properties, has made the first call for subscriptions on the purchases of the Florida Central and Peninsular. The system so far determined will include the S. A. L., the Florida Central & Peninsular, the Georgia & Alabama, the South Bound and the Richmond, Petersburg & Carolina, now building. (Feb. 3, p. 95.)

SPOKANE FALLS & NORTHERN.—The \$225,000 of 6% gold debentures of 1897 have been called for redemption at the Chase National Bank at par with accrued interest, interest to cease after July 1.

WEST VIRGINIA & PITTSBURGH.—Steps are to be taken for the reorganization of this property and a decree of foreclosure sale has been applied for in the United States Circuit Court at Clarksburg, W. Va. (March 31, p. 238.)

WISCONSIN CENTRAL.—The Coppell committee has prepared a plan of reorganization to be carried out under the direction of the following reorganization managers: Maitland, Coppell & Co., 24 Exchange Place, New York; Brown Bros. & Co., 59 Wall St.; Edward Sweet & Co., 38 Broad St. Depositories, United States Trust Co., New York; Old Colony Trust Co., Boston. New securities of the company are to be issued as follows:

First general mortgage 50-year 4% gold bonds, to bear interest from July 1, 1899, total \$27,000,000. Of this, \$3,479,000 is to be issued in exchange for old securities; \$3,117,687 to pay receiver's certificates and other obligations; \$10,291,942 for buying bonds, stocks and notes agreed to under the reorganization plan, and for satisfaction of underlying liens, and \$5,111,71 for betterments, new equipment and reorganization expenses; preferred stock 4% non-cumulative, beginning July 1, 1899, total issue \$12,500,000, of which \$3,476,300 is to be issued in exchange for old securities; \$3,021,941 to be sold to the syndicate for cash, and \$1,001,709 for reorganization purposes; common stock limited to \$17,500,000, of which \$3,626,650 is to be issued in exchange for old securities; \$12,653,329 to be sold to the syndicate, and \$1,219,421 for reorganization purposes.

Both classes of stock of the new company and shares vested in those necessary to qualify directors are to be vested in the following voting trustees: Geo. Coppell, John Crosby Brown, Wm. L. Bull, Fred. T. Gates and Francis R. Hart. This stock is to be held for five years or may be delivered earlier at the discretion of the trustees. The cash requirements aggregate \$21,550,503, of which \$5,060,257 is for new equipment, improvements and other purposes of the new company, for the expenses of reorganization, etc. To meet this, the syndicate agrees to pay \$21,550,503 for the following securities: New 4% bonds, \$15,521,000; new preferred stock, \$3,021,941; new common stock, \$3,007,562. The net earnings for 1898 were \$1,413,637. The fixed charges are estimated at not to exceed \$1,080,000, leaving a net surplus for dividends on preferred stock of \$333,637. Other income is estimated at \$75,000, and the increased net earnings for improvements and new equipment for which cash is provided, about \$250,000.

The reorganization committee calls for a meeting of the holders of the United States Trust Company's certificates, to be held in New York, May 2, to consider the plan. (March 3, p. 164.)

Electric Railroad News.

ATLANTA, GA.—It is said that negotiations are in progress for the consolidation of various street railroads in Atlanta. Jacob Hurt, of Atlanta, Chairman of the Finance Committee of the Atlanta Consolidated St. Ry. Co., is now in Baltimore to consult with bankers regarding a loan for his company, the majority stock of which is held by Baltimore capitalists.

BIRMINGHAM, ALA.—John Douglass, former Superintendent of the Highland Avenue & Belt RR. Co., has succeeded A. Lataday as General Manager, resigned. This company is still in the hands of Phil. Campbell as Receiver.

BRAINTREE, MASS.—The Baintree & Weymouth St. Ry., an electric railroad of 12.60 miles, has, according to report, been sold to the Philadelphia Transit Co. of Philadelphia. The Rockland & Abington St. Ry., a 14-mile electric railroad recently purchased by Pepper & Register of Phila-

delphia, will be used in the interest of the persons who bought the B. & W. The B. & W. is capitalized at \$160,000.

BROOKLYN, N. Y.—The temporary injunction granted to Peter H. Flynn to restrain the leasing of the Nassau Electric RR. to the Brooklyn Rapid Transit Co. was dissolved on April 7. Mr. Flynn claims he owns \$1,500,000 of the common stock of the Nassau road out of a total of the issued capital stock said to be \$6,000,000 preferred and \$7,000,000 common. The Brooklyn Rapid Transit owns about 80% of the total stock, and Mr. Flynn has refused to sell his holdings in the Nassau.

The Kings County Elevated RR., of which August Belmont is Chairman, gives notice that the plans of reorganization are ready for distribution to the holders of the various securities. Security holders may become parties to the reorganization agreement by depositing their securities by May 15 with the Guarantee Trust Co., on paying the assessment called for by the plan, which also provides for foreclosure and the issue of the following new securities:

First mortgage 4% gold bonds, due in 1949; these bonds are to be secured by mortgage covering all the property and franchises of the new company, including after-acquired property. Total issue, \$7,000,000. Of which issuable for reorganization expenses, \$5,000,000. Remaining in the treasury for future improvements, 2,000,000. Preferred stock, 5 p. c. per annum, non-cumulative (to be exchanged for \$1,400,000 B. R. T. stock), 2,800,000. Common stock (to be exchanged for \$600,000 B. R. T. stock), 6,000,000.

After the organization of the new company and the receiver of the old company is discharged, the stock of the new company will be exchanged for stock of the Brooklyn Rapid Transit Co. as follows: \$100 B. R. T. stock for \$200 preferred stock of the new company, or \$100 common stock for \$1,000 common stock of the new company. This will transfer the ownership of the Kings County Elevated Ry. to the Brooklyn Rapid Transit Co. free and clear of all encumbrances except the above mortgage of \$7,000,000.

Mr. Flower is reported to have stated regarding the Brooklyn Rapid Transit Company's contract with the Kings County Elevated RR.: "This secures for the B. R. T. all the elevated roads in Brooklyn, and all the traction companies except one. The officers of the company estimated that the savings in operating expenses alone through consolidation will be equal to 4% on the stock. Since April 1 the earnings on the entire system have been increasing on an average of more than \$3,000 per day, and we expect that with the summer traffic the earnings will increase over \$5,000 per day." The following table shows the exchange of old for new securities:

Old Securities	Pay per \$1,000 bonds, \$100 stk.	New 1st New	New	Com.B.R.T.
per \$1,000 bonds, \$100 stk.	Assess- ment.	Mort'ge Bonds.	Stk.	Stk.
Kings Co. Elev. 1st M.	\$850	\$250	....	\$125
Fulton Elev. 1st M.	\$30	250	....	125
Kings Co. Coll. Trust	.....	.....	300	600
"A"	100	....	200	400
Kings Co. Coll. Trust	.....	.....	200	400
"B"	100	....	200	400
Kings Co. Income De-	.....	.....	200	400
bents	100	....	200	400
Kings Co. Stock	6	....	3	60

It is stated that negotiations have been resumed for the absorption of the Coney Island & Brooklyn RR., which is at present the only surface or elevated road in Brooklyn which has not passed under the control of the Brooklyn Rapid Transit Co.

CHICAGO, ILL.—The Central Trust Co. of New York gives notice that the securities to be issued under the agreement and plan of reorganization of the Metropolitan West Side Elevated RR. are ready for delivery. Holders of certificates for stock are required at the time of deposit of same for exchange to pay the sum of \$4 per share, for which contribution new bonds or fractional scrip for new bonds at par will be delivered. (March 17, p. 200.)

COLUMBUS, O.—Judge Bigger has decided that the recent order for the sale for the Columbus Central St. Ry. could not be carried out until the charge that some of the \$1,500,000 bonds of the company had been fraudulently issued had been investigated. Geo. H. Worthington of Cleveland, O., is Receiver. (Feb. 3, p. 96.)

DENVER, COLO.—Judge Hallett in the United States Circuit Court April 13 refused to grant an injunction to prevent the consolidation of the street railroads in Denver, as noted in this column last week. The court held that the section of the State Constitution forbidding the consolidation of parallel lines does not apply to street railroads.

EVANSVILLE, IND.—Vice-Pres., Treas. and General Manager H. D. Morgan of the Evansville St. Ry. Co., was on April 14 appointed Receiver of that property. Judgment was obtained the previous day for \$26,000 indebtedness to John E. Hott Bowers of New York. The road is 27 miles long and it is said is barely earning running expenses. The property is bonded for \$1,000,000.

INDIANAPOLIS, IND.—The Readjustment Committee of the Citizens St. RR. Co. of Indianapolis has its plan prepared. There will be a new issue of 4 per cent. bonds, for which the trust certificates can be exchanged on the basis of \$100 for \$25 in the new bonds, and in addition the certificate holders will receive \$10 of the new stock full paid. It is stated that about 90 per cent. of the trust certificates have already been deposited with the committee, and that new certificates will probably be issued about May 1. John C. Bullitt is chairman of the committee.

A special meeting of the stockholders of the Citizens St. RR. Co. will be held on May 3 to act on a resolution for the directors to sell the property to the Indianapolis St. Ry. Co., which has been organized for the consolidation of the various Indianapolis street railroads. (March 10, p. 182.)

McKEESPORT, PA.—It is reported that the Versailles Traction Co., 4 1/4 miles long, has been absorbed by the United Traction Co., of Pittsburgh, Pa. The U. T. now operates a road on Walnut St., which will be replaced by new tracks during the summer and connected with the tracks of the Versailles Traction Co.

NEW BRUNSWICK, N. J.—The stockholders of the Millstone & New Brunswick RR. held their annual meeting April 5 and elected the following Directors: C. B. Thurston, F. S. Wilson, Matthew Suydam, John A. Anderson, Lewis Perrine, R. D. Barclay, Samuel Rea, Lewis T. Howell. The Directors organized by electing C. B. Thurston President and J. S. Van Zandt Secretary and Treasurer.

NORWALK, CONN.—The Norwalk St. Ry., an electric railroad of about eight miles, operating between Norwalk, South Norwalk and Winipauk, is

reported sold to a syndicate composed of W. F. Sheehan, R. A. C. Smith, H. G. Runkle and others. The capital stock of the Norwalk St. Ry. is \$500,000 and it is said that the price paid for the stock was about \$80 per share.

OSWEGO, N. Y.—The foreclosure sale of the Lake Ontario & Riverside St. Ry. Co., which was ordered by the Supreme Court, took place April 11. Parcel No. 1, which included all railroad property in the city of Oswego, town of Oswego and the town of Scriba, was sold to Max B. Richardson for \$80,000. Parcel No. 2, which included all the street railroad property of the company in the village of Fulton and Oswego Falls, was sold to Lawrence J. Richardson for \$10. Max B. Richardson announced that his bid was in the interest of the bondholders' committee. The L. O. & R. St. Ry. was a part of the Oswego St. Ry.

PATERSON, N. J.—At an election of the New Jersey Electric RR. Co., April 10, the following were elected directors: Chandler W. Riker, F. A. Nevin, T. M. McCarter, U. H. McCarter, Adrian Riker, James A. Morris and F. C. VanDyk. C. W. Riker was elected President, succeeding John L. Helms, resigned, and N. H. McCarter was elected Secretary and Treasurer. The same men were elected directors of the Jersey City, Hoboken & Rutherford Electric Ry. Co.

The Paterson, Passaic & Rutherford Electric RR. Co. elected the following directors the same day: Chandler W. Riker, F. A. Nevin, T. M. McCarter, U. H. McCarter, Adrian Riker, James A. Morris, F. C. Van Dyk, Cecil McMahon, Fred W. Egnar and Frederick Lehlback.

PHILADELPHIA, PA.—It is said that a concern to be known as the Electric Traction Co. of America, and to be capitalized at \$25,000,000, is formed to secure control of all the electric traction companies in and about Philadelphia. Among those said to be identified with the movement are John Lowber Welsh, Silas W. Pettit and W. H. Sheldermine. It is said that A. A. McLeod will be President of the new company.

PUEBLO, COL.—An ordinance is before the City Council granting certain rights to the Pueblo Traction & Electric Co., and also permitting that company to take over the franchises and rights of the Pueblo Light & Power Co., which with the Electric Light & Power Co. has been reorganized under the name of the Pueblo Traction & Electric Co., incorporated for that purpose. The new ordinance requires the company to pave all the streets on which its tracks are located. (March 24, p. 200.)

QUINCY, MASS.—The stockholders of the Quincy & Boston St. Ry., who have purchased the Braintree St. Ry., have voted to increase the capital stock of \$500,000 by \$84,000 additional. The Braintree St. Ry. has been operated by the Q. & B., and the purchase of it was recently authorized by the Railroad Commissioners. (March 10, p. 182.)

SAN FRANCISCO, CAL.—The Mill Valley & Mount Tamaplas Scenic Ry. Co. has filed a certificate of increase of the bonded indebtedness of \$100,000 for the liquidation of debts and for the purchase of new rolling stock. The bonds are to run for 30 years and to bear interest at 5%. The Directors are S. B. Cushing, E. P. Gray, Daniel E. Hayes, A. B. Runyon, Charles de Guigne, H. F. Woods and W. B. de Fremery.

TAUNTON, MASS.—A hearing was given by the State Railroad Commissioners April 10 on the petition of the Dighton, Somerset & Swansea St. Ry. Co., for authority to use the tracks of the Taunton St. Ry. together from the junction between Taunton and Dighton at North Dighton Village to Taunton Green in Taunton. The Norton & Taunton St. Ry. Co. has also asked permission to use certain of the tracks of the Taunton St. Ry. in the city of Taunton. Several months ago rumors were current that these companies were about to consolidate. (Feb. 3, p. 96.)

TERRE HAUTE, IND.—The holders of first and second mortgage bonds of the Terre Haute Electric Ry. have secured a postponement in the foreclosure proceedings. (March 24, p. 220.)

WASHINGTON, D. C.—The Anacostia & Potomac River Ry. Co. has made a deed of trust to secure \$3,000,000 of 5 per cent. 50-year gold bonds. The Baltimore Trust & Guarantee Co. is trustee for \$2,250,000 of this amount, the rest to remain in the treasury of the railroad company. This bond issue completes the reorganization of the Anacostia & Potomac River, by which the Belt Ry. and the Capital Traction Co. become parts of a larger system, the Washington City RR. Co., organized for the consolidation of all the street railroads in the District, which involves 32 miles of railroad. The deed was placed on file April 7 by the American Security & Trust Co., trustees appointed by the court to sell the property. Oscar T. Crosby and N. T. Bond, who bought the Belt Ry. for \$350,000, secured the abandonment of the sale and the transfer of the Anacostia Co. to the Washington City RR.

Before the adjournment of Congress a bill was approved permitting the Anacostia & Potomac River to buy the property and franchise of the Brightwood Ry. Co.; Washington, Woodside & Forest Glen Ry. & Power Co., of Montgomery County, Md., and the City & Suburban Ry. of Washington. This bill was instrumental in assisting the consolidation of these companies.

TRAFFIC.

Traffic Notes.

Mr. Richardson, Chairman of the Southeastern Passenger Association, has published a notice warning passengers to beware of counterfeit tickets. It is said that a large number of forged tickets are on the market in Florida.

The Massachusetts State Railroad Commissioners, reporting on the petition of the Acton Creamery Co., hold that the Fitchburg Railroad should provide the Creamery company facilities for the handling of milk equal to those furnished the Boston Dairy Co. The Acton company is a new concern and complained of the more favorable rates granted the older and larger company.

It is reported in the newspapers that 600 soldiers have been taken from Columbus, O., to Ogden, Utah,

at \$6.90 per capita, or less than one-third of a cent a mile, the distance being 2,128 miles. The soldiers are bound for the Philippine Islands and the contract east of Chicago was made by the New York, Chicago & St. Louis and west of Chicago by the Chicago, Burlington & Quincy. The rate from Columbus to Chicago was \$1 and from Chicago to Ogden \$5.90.

The State Railroad Commissioners of Minnesota, who recently ordered a reduction in the freight rates on coal from Duluth to New Ulm and other points on the Minneapolis & St. Louis, have issued an order apportioning the new rate to the two roads interested, the companies having failed to agree. The rate to New Ulm was ordered reduced from \$2.50 to \$1.95. Of this the St. Paul & Duluth is allowed \$1, which is the same amount that it received out of the former rate, and the Minneapolis & St. Louis is allowed only 95 cents.

The Supreme Court of Kansas has dismissed the appeal of the Missouri Pacific in the suit which was begun to compel the railroads to obey the order of the State Railroad Commission forbidding the use of hundred-pound rates in computing freight charges on carloads of live stock. The abolition of the State Railroad Commission by the last Legislature is held to have abrogated the orders made by the Board, so that there is now nothing of a substantial nature left for the court to deal with. This leaves the railroads free to make rates on their own plan. The Commission took the part of the stock shippers, who objected to the abolition by the railroads of carload rates.

The railroads have made a new rule for the Grand Army National Encampment in Philadelphia next September. Heretofore it has been customary to side track sleeping and dining cars and allow them to be used by the excursionists for sleeping and eating purposes during an encampment. Notice has been given that such a custom cannot be followed this year or hereafter. Business men, who contribute largely to meet the expenses of the meetings, object to the arrangement, saying it keeps money away from those who contribute to make the encampment possible.

The Interstate Commerce Commission has begun the investigation of relative rates charged on domestic and export shipments of grain and grain products to North Atlantic and Gulf ports. It is alleged that the present differences on export and domestic rates to such ports violate the act to regulate commerce, particularly sections 3 and 4 thereof. It is stated in the order that, while no tariffs showing through rates from points in the United States to points in foreign countries are filed with the Commission, it is alleged that the carriers do make such through rates and engage in such transportation, and that they thereby violate section 6 of said act. The roads are required to file answers by May 1.

Chairman Knapp's Views.

(From Leonard's Railway News, New York.)

Hon. Martin A. Knapp, Chairman of the Interstate Commerce Commission, was in the city last Saturday. Among other things he said:

"It is quite generally known that the Interstate Commerce Commission several weeks ago inaugurated a movement whereby the railroads and itself were brought in closer contact with each other. For years the commission and the railroad interests were widely divided, and perhaps this was more or less attributable to the unfortunate remark of the late Judge Cooley, that the commission was created for the benefit of the public and the railroads could take care of themselves. . . . The conditions became aggravated a few months ago, and the commission decided to lend its aid in endeavoring to bring the semblance of order out of chaos. We felt that while we were virtual strangers to the railroad interests, we could be of service by reason of the fact that we were a public body, which of itself usually carries some respect and influence. We invited the Trunk line presidents to confer with us on the existing state of affairs. We wanted to size them up, and in turn give them an opportunity to size us up. They came to Washington on different occasions. Matters were freely and fully discussed, and they very promptly and willingly agreed to do their utmost to aid in the work of reform. The same efforts were extended to the Western lines, and with them we have had two conferences, with the result that they, too, have undertaken to promote the maintenance of tariff rates. A general result of these conferences is, in my opinion, the best condition of tariff rate observance that has existed in ten years. There is a better understanding between the roads and the commission, and while the commission is quite satisfied with the work it has done it fully appreciates the peculiar legal conditions confronting the railroad interests. If there is any distinction to be made it would seem that the results have been better in the Eastern territory than in the West. Conditions in the East are more compact, so to speak, while in the West they are more complicated and more difficult to control. I do not claim that our efforts have resulted in a complete observance of tariff rates by every line. There are, of course, weak spots, but the results so far attained are certainly in the direction of diminishing the practice of paying rebates and other forms of discrimination. But the commission proposes to continue further on the present lines. It is carrying out its fullest powers under the law, but it does not propose to inaugurate a spy system. It will continue to investigate complaints, and when necessary will refer cases to the proper branch of the Government for action. We expect to have further conferences with the officials of the railroads of the country, and we hope that conditions will continue favorable to the work. While I am gratified with the progress so far achieved, I am apprehensive. New elements in the eastbound situation have appeared within the last few days that are not calculated to promote harmony. With the agreement on grain differentials the commission had nothing to do. It was purely an experimental matter on the part of the Trunk lines, and their decision to cancel it is not surprising. Quite naturally this is followed by the filing of low tariffs on export traffic from Western points. Whether the so-called spot tariffs are justified by conditions is a question. The commission is by no means satisfied with them, and it proposes to investigate them.

"The commission is still of the same mind on the question of the enlargement of its powers, as described in its reports to Congress. The law is insufficient, and a preponderating majority of the railroad interests of the country is with us on this proposi-

tion. Of course, there is opposition by such men as Mr. Milton H. Smith, President of the Louisville & Nashville, who has persistently misrepresented the desires of the commission in this regard.

"We do not ask for the power to fix rates. Such a thing is preposterous. It would be absurd to expect five men to fix the rates for the railroads of this country. We are not seeking to become a part of the Supreme Court. We would not undertake to make rates, and in no wise seek to gain such power. . . . So far as pooling legislation is concerned the prospects are not bright for some time to come."

Export Corn Rate Decision.

The Interstate Commerce Commission, in an opinion by Commissioner Calhoun, has announced its decision in the matter of export rates from points east and west of the Mississippi River. The rates involved are those on corn from points in Illinois, as compared with those from places west of the river, particularly in Iowa. The Boards of Trade of Chicago and Peoria were complainants. During 1898 the rates on export corn to New York were 17½ cents per 100 lbs. from Chicago and 19 cents from Peoria, and the Chicago rate of 17½ cents was fixed as a proportional rate from the Mississippi River on corn coming from west of the river and carried through for export. In January and February of this year the carriers reduced this proportional rate from the Mississippi River 4 cents; namely, to 13½ cents, and only reduced the Chicago and Peoria rates 1½ cents; namely to 16 cents from Chicago and 17½ cents from Peoria. The low rate from the river operated to reduce rates from all points west of the river to New York 4 cents, and it further resulted that numerous rates on export corn from points in Iowa to Atlantic seaports were made lower than the rates from many points in Illinois to the seaboard.

It was claimed that, while Illinois corn is excluded from the export market, it still has control of the domestic market. The commission says it is neither sound in principle nor equitable in practice for railroads to create artificial differences in market conditions by an arbitrary differential in rates, whereby the product of one section of the country is assigned to one market and the product of another section to another market.

The commission does not find the evidence sufficient to enable it to determine whether the old relation of rates should be restored or what changes should be made in rates from Illinois points to make them relatively just as compared with all the various local rates from Iowa and other trans-Mississippi points. The commission does hold and decide that through or local combination rates on export corn from any points in Illinois which are higher than the through or combined rates on corn from any point in Iowa are unlawful under section 3 of the act to regulate commerce. The Boards of Trade are granted leave to apply for a further hearing in regard to the effect of the changes made in the general rate readjustment. The commission says the principle of the decision applies to all grain.

Chicago Traffic Matters.

Chicago, April 19, 1899.

There are very good prospects that the differential basing rates tendered the Western roads by the Michigan Central will be accepted by the former. If not there will be but one thing left for the Michigan Central to do, namely, put in differential rates from Chicago proper. It is the general opinion that the Western roads, as a body, turned down the Michigan Central's offer merely for a showing.

The decision of the Inter-State Commerce Commission in the export corn rate case had little effect, as the roads east of the Mississippi River had already taken action to equalize these rates. As the tariffs now stand the proportional rate on export corn and wheat is 12 cents from Mississippi River crossings, East St. Louis to Dubuque, inclusive, to New York, Boston and Portland; 11 cents to Philadelphia and Montreal, and 10½ cents to Baltimore, Newport News and Norfolk. The same rates will apply from Peoria, Chicago and Chicago Junctions. On domestic grain of all kinds the basis Chicago to New York is 17 cents.

The elevation of tracks begins to make possible an improvement of Chicago suburban service. The Rock Island has added six new express trains to run between the city terminus (Van Buren street) and Blue Island, 22 miles out. Some of the trains (express) will reach Englewood (Sixty-third street) in 16 minutes. It is expected that the new schedule will give as good service as that on the Illinois Central, although not so many trains will be run. On Sundays four new trains will be run.

The Northern Pacific has changed its arrangements for handling Yellowstone Park business during the coming season. Instead of selling round trip tickets with the park expenses included, it will merely sell tickets to its terminus at Cinnebar, from which point passengers will pay their own expenses. The round trip rate from Chicago to Cinnebar has been fixed at \$67.50, and the park expenses are figured at \$44.50.

Another attempt will be made to reorganize the Western Passenger Association. A meeting has been called for April 26 in this city. The lines west of the Missouri River that have been holding out for a separate organization have not changed their attitude, and it is the feeling of the general passenger agents of the roads favoring a single association to go ahead and reorganize on this basis, whether the trans-Missouri lines come in or not.

A so-called decision in favor of a ticket broker has been rendered by one of the lower courts in this city, and the brokers and some of the daily papers are making much noise about it, though in fact the decision, as reported, does not touch on the law at all. The judge, if correctly reported, only gave utterance to a few bits of Dutch justice, which will please the galleries—and nothing more. The case was that of George Frank, Louis Stein and Robert C. Davis, who had been indicted for violation of the anti-scalping law enacted by the legislature in 1895. The court (Judge Brentano) found that the law was unconstitutional, as "it sought to deprive citizens of a means of livelihood on account of illegal acts of some of the persons in the ticket brokerage business." The court held that the object of the law was to give to the railroad companies the right to restrict the business of ticket selling to persons whom they wished to delegate with written authority. The court ordered that the relators before him be discharged. No formal order was entered to this effect, however, as at this point in the proceedings the lawyers raised a dispute on technicalities, and the case was continued.